

## Andrés E. Tejada-Martínez

### Education

Rensselaer Polytechnic Institute (RPI), Ph.D. in Mechanics, 2003  
New York University - Courant Institute of Mathematical Sciences, M.S. in Mathematics, 1998  
Columbia University, M.S. in Engineering Mechanics, 1996  
Columbia University, B.A./B.S. in Applied Mathematics/Civil Engineering, 1995

### Research interests

Direct numerical simulation (DNS) and large-eddy simulation (LES) of turbulent flows; simulations and field observations of turbulent mixing in the upper ocean; flow simulations of drinking water and wastewater treatment systems; simulations of turbulent viscoelastic flows; numerical methods for turbulent flows (spectral, finite difference, finite element methods); parallel computing

### Appointments

2013-present Associate Professor (with tenure), Department of Civil and Environmental Engineering, University of South Florida (USF), Tampa, Florida  
July 2017 Visiting Researcher, National Oceanography Center, Liverpool, UK  
July 2014 Visiting Researcher, National Oceanography Center, Liverpool, UK  
2007-2013 Assistant Professor, Department of Civil and Environmental Engineering, USF, Tampa, Florida  
May 2008 Visiting Research Assistant Professor, Laboratoire de Mécanique de Lille, Université des Sciences et Technologies de Lille, Polytech'Lille, France  
2006-2006 Post-doctoral Researcher, Marine Physical Laboratory, Scripps Institution of Oceanography, University of California, San Diego  
2003-2006 Post-doctoral Researcher, Center for Coastal Physical Oceanography, Old Dominion University, Norfolk, Virginia  
March 2005 Visiting Scholar, Institute for Computational and Engineering Sciences (ICES), University of Texas, Austin  
1998-2002 Graduate Student Researcher (advisor: *Kenneth E. Jansen*), Scientific Computation Research Center, Rensselaer Polytechnic Institute, Troy, New York  
1995-1997 Graduate Student Researcher, Department of Civil Engineering and Engineering Mechanics, Columbia University, New York, New York  
Summer 1995 Graduate Student Researcher, Mathematics and Computer Science Division, Argonne National Laboratory, Argonne, Illinois

### Honors/Awards

- Guest Co-Editor of *Journal of Environmental Engineering* Special Issue titled "Emerging CFD Applications in Water Treatment", 2018-2019
- Elected member of the ASCE Engineering Mechanics Institute Fluid Dynamics Committee, 2018
- Invited to participate in the *Computational Fluid Dynamics Software Infrastructure Workshop* (2018) sponsored by National Science Foundation (NSF) and held at University

of Colorado, Boulder, CO

- Guest Editor of *Computers and Fluids* Special Issue titled “LES and DNS of Oceanic and Atmospheric Flows”, 2016-2017
- Founding member of American Society of Civil Engineers (ASCE) Computational Fluid Dynamics (CFD) Task Committee on applications of CFD to drinking water and wastewater treatment, 2015-present
- Keynote speaker at the *7th International Conference on Computational Methods* (2016), University of California, Berkeley
- NSF CAREER Award (2009-2014) for computations of turbulent mixing in the upper ocean
- Invited to participate in the *NSF Cyberbridges Workshop* (2012, 2013), Arlington VA
- Keynote speaker at the *Third International Congress of Energy, Materials and Environmental Issues*, Universidad Autonoma del Caribe, Barranquilla, Colombia (2011)
- Invited to participate in the *Surface Waves and Upper Ocean Boundary Layer Dynamics Workshop* (2010) sponsored by Office of Naval Research and held at Scripps Institution of Oceanography, University of California, San Diego
- Invited to participate in the *Development of Fluid Mechanics Community Software and Data Resources Workshop* (2010), sponsored by NSF and held at Institute for Computational and Engineering Sciences (ICES), University of Texas, Austin
- Won “Best Abstract Award” at the *VIII Annual Meeting of the Iberoamerican Society for Prenatal Diagnosis and Therapy* for the abstract titled “Computational fluid dynamics analysis of flow velocity waveforms in a constricted pulsatile channel” (2009)
- General Electric Scholar (2000, 2001)
- Graduate Engineering Minority Fellow sponsored by Mathematics and Computer Science Division of Argonne National Laboratory (1996)
- NSF Graduate Fellowship Honorable Mention (1995, 1996)

#### **Research funding (Total as lead PI or single PI: \$3,631,836)**

1. **A. E. Tejada-Martínez** (lead PI) and Y. Bazilevs (PI, Brown University) "Collaborative Research: LES and RANS simulations of estuarine flows: Understanding and parameterizing the role of Langmuir turbulence" awarded by National Science Foundation (Fluid Dynamics Program), \$377,356, August 2018 – July 2021.
2. **A. E. Tejada-Martínez** (single PI) “Langmuir supercells under the influence of tidal forcing, surface buoyancy, and misaligned net current, winds, and waves”, Awarded by Office of Naval Research (Physical Oceanography Program), \$99,616, July 2018 – June 2021
3. **A. E. Tejada-Martínez** (lead PI), D. Savidge (PI, Skidaway Institute of Oceanography) “Collaborative Research: Characterization of Langmuir Supercells in the coastal ocean”, awarded by National Science Foundation (Physical Oceanography Program), \$641,089, June 2018 – May 2021.
4. A. Sunol (PI, USF) and **A. E. Tejada-Martínez** (co-PI), “Development and experimental validation of Hillsborough County wastewater models for user friendly robust controls”, awarded by Hillsborough County, FL, \$50,000, January 2018 – December 2018.
5. **A. E. Tejada-Martínez** (lead PI), Michel Boufadel (PI, New Jersey Institute of Technology), Arnoldo Valle-Levinson (PI, University of Florida, Gainesville) and David Murphy (co-PI, USF), “Turbulent vertical mixing and the formation of oil particle aggregates: LES, measurements and modeling”, awarded by Gulf of Mexico Research

- Initiative (GoMRI), \$999,185, January 2018 – December 2019.
6. N. Crane (lead PI, USF), **A. E. Tejada-Martínez** (Co-PI) and R. Guldiken (co-PI, USF), Supplement to “Switchable Adhesion: Wetting Modulation by Ultrasonic Vibration”, awarded by National Science Foundation (Materials Engineering and Processing Program), \$31,200, January 2016-December 2018.
  7. **A. E. Tejada-Martínez** (PI, USF), “Large-eddy simulation and vertical mixing parameterizations of turbulence in the upper ocean” (sub-proposal for University of Miami’s submission to GoMRI RFP-IV titled “Consortium for Advanced Research on Transport of Hydrocarbons in the Environment”), awarded \$200,000 to Tejada-Martínez, January 2015-December 2017.
  8. N. Crane (lead PI, USF), **A. E. Tejada-Martínez** (Co-PI) and R. Guldiken (Co-PI, USF), “Switchable Adhesion: Wetting Modulation by Ultrasonic Vibration”, awarded by National Science Foundation (Materials Engineering and Processing Program), \$386,366, January 2015- December 2018.
  9. J. Polton (lead PI, National Oceanography Laboratory, Liverpool, UK), T. Ripeth (PI, Bangor University, Bangor, UK), and M. Inall (PI, Scottish Association for Marine Science, Oban, UK) “Pycnocline mixing in shelf seas”, a consortium funded through the Natural Environment Research Council (NERC) in the UK; 3 months of summer salary (~\$30,000) awarded to Tejada-Martínez as an international collaborator to visit the National Oceanographic Institute in Liverpool within the timeframe of January 2014 – December 2018.
  10. **A. E. Tejada-Martínez** (lead PI) and F. Veron (PI, University of Delaware), “Collaborative Research: DNS and high resolution measurements of scalar transfer across an air-water interface during inception and growth of Langmuir circulation”, awarded by National Science Foundation (Physical Oceanography Program) for \$678,161, September 2012 - August 2017.
  11. **A. E. Tejada-Martínez** (lead PI), Supplement to “Collaborative Research: LES and modeling of turbulence on shallow shelves under combined Langmuir, tidal and convective forcing with comparison to VADCP observations” (see below) awarded by National Science Foundation to travel to National Oceanography Laboratory, Liverpool, UK, \$23,000, July-August 2014.
  12. **A. E. Tejada-Martínez** (lead PI) and M. Ross (Co-PI, USF), “Three-dimensional computational modeling of hydrodynamics of pool circulation”, awarded by Crystal Blue Vortex, LLC with supplement from the Florida High Tech Corridor for \$18,000, October 2010 - June 2011.
  13. A.E. Gargett (lead PI, Old Dominion University), C.E. Grosch (Co-PI, Old Dominion University), **A.E. Tejada-Martínez** (PI, USF) and D. Savidge (PI, Skidaway Institute of Oceanography), “Collaborative Research: LES and modeling of turbulence on shallow shelves under combined Langmuir, tidal and convective forcing with comparison to VADCP observations,” awarded by National Science Foundation (Physical Oceanography Program) for \$831,484, September 2009 - April 2014.
  14. **A. E. Tejada-Martínez** (single PI), “CAREER: Parameterizations of Langmuir turbulence in shallow water”, awarded by National Science Foundation (Fluid Dynamics Program) for \$480,000, August 2009 - December 2014.
  15. **A. E. Tejada-Martínez** (lead PI) and P. Neale (PI, Smithsonian Environmental Research Center), “Collaborative Research: Impact of Langmuir circulation on gas transfer and photosynthesis in the Southern Ocean: A large eddy simulation study”, awarded by National Science Foundation (Antarctic Ocean and Atmospheric Sciences Program) for \$315,429, June 2009 - May 2013.

16. **A. E. Tejada-Martínez** (PI, USF), “Collaborative Research: Large-eddy simulation and VADCP measurements of turbulence in shallow seas”, awarded by National Science Foundation through a subcontract from Old Dominion University Research Foundation for \$43,000, August 2007 - August 2009.
17. C.E. Grosch (PI, Old Dominion University) and **A. E. Tejada-Martínez** (Co-PI, Old Dominion University), “Studies in time-varying, forced turbulent flow and temporally filtered large-eddy simulation”, awarded by NASA Langley Research Center for \$102,147, January 2005 - December 2006.

## Refereed Archival Publications

**Note:** Name of student and or post-doc under the supervision of Tejada-Martínez is italicized.

1. *Zhang J., K. Pierre, and A. E. Tejada-Martínez* (2018), “The impacts of flow and tracer release unsteadiness on tracer analysis of water and wastewater treatment facilities”, accepted, *Journal of Hydraulic Engineering*.
2. *Sinha, N., J. Zhang, M. Ross and A. E. Tejada-Martínez* (2018), “Computational fluid dynamic analysis of the hydraulic (filtration) efficiency of a residential swimming pool”, accepted, *Journal of Water and Health*.
3. *Golshan, R., M. C. Boufadel, V. A. Rodriguez, X. Geng, F. Gao, T. King, B. Robinson and A. E. Tejada-Martínez* (2018), “Oil droplet transport under non-breaking waves: An Eulerian RANS approach combined with a Lagrangian particle dispersion model”, *Journal of Marine Science and Engineering*, 6, 7, 1-16.
4. *Hafsi, A., F. Veron and A. E. Tejada-Martínez* (2017), “Direct numerical simulation of scalar transfer across an air-water interface during inception and growth of Langmuir circulation”, *Computers and Fluids*, 158, 49-56.
5. *Juha, M., J. Zhang and A. E. Tejada-Martínez* (2017), “Large scale structures in LES of an oscillating open channel flow under the influence of surface cooling”, *Computers and Fluids*, 158, 96-106.
6. *Smyth, R., C. Akan, A. E. Tejada-Martínez and P. Neale* (2017), “Quantifying phytoplankton productivity and photoinhibition in the Ross Sea Polynya with large eddy simulation of Langmuir circulation”, *Journal of Geophysical Research – Oceans*, 122, 5545-5565.
7. *Yan, J., A. Korobenko, A. E. Tejada-Martínez, R. Golshan and Y. Bazilevs* (2017) “A new variational multiscale formulation for stratified incompressible turbulent flows”, *Computers and Fluids*, 158, 150-156.
8. *Golshan, R., A. E. Tejada-Martínez, M. Juha and Y. Bazilevs* (2017) “LES and RANS simulation of wind and wave-forced oceanic turbulent boundary layers in shallow water with wall modeling”, *Computers and Fluids*, 142, 96-108.
9. *Zhang, J., A. E. Tejada-Martínez, D. Lei, and Q. Zhang* (2016) “Indicators for technological, environmental and economic sustainability of ozone contactors”, *Water Research*, 101, 606-616.
10. *Walker R., A. E. Tejada-Martínez and C. E. Grosch* (2016) “Large-eddy simulation of a coastal ocean under the combined effects of surface heat fluxes and full-depth Langmuir circulation”, *Journal of Physical Oceanography*, 46, 2411-2436.
11. *Ouedraogo, F., P. Cornejo-Warner, J. Zhang, A. E. Tejada-Martínez, Q. Zhang and J. R. Mihelcic* (2016) “Impact of sludge layer geometry on the hydraulic performance of a waste stabilization pond”, *Water Research*, 99, 253-262.

12. *Hafsi, A., Y. Ma, M. Buckley, A. E. Tejada-Martínez and F. Veron (2016) "DNS and measurements of scalar transfer across an air-water interface during inception and growth of Langmuir circulation", IOP Conference Series: Earth and Environmental Science, 35, 012006.*
13. *Zhang, J., A. E. Tejada-Martínez, and Q. Zhang (2016) "Rapid analysis of disinfection efficiency through computational fluid dynamics. Journal – American Water Works Association, 108, E50-E59.*
14. *Golshan, R., A. E. Tejada-Martínez, M. Juha, Y. Bazilevs (2015) "Large-eddy simulation with near-wall modeling using weakly enforced no-slip boundary conditions", Computers and Fluids, 118, 172-181.*
15. *Sinha, N., A. E. Tejada-Martínez, C. Akan and C. E. Grosch (2015) "Toward a K-profile parameterization of Langmuir turbulence in shallow coastal shelves", Journal of Physical Oceanography, 45, 2869-2895.*
16. *Kinyua, M. N., J. Zhang, F. Camacho-Céspedes, A. E. Tejada-Martínez, S. J. Ergas (2015) "Fate and transport mechanisms and performance of small-scale tubular anaerobic digesters in the Monteverde Region of Costa Rica", Biochemical Engineering Journal, 107, 35-44.*
17. *Walker, R., A. E. Tejada-Martínez, C. E. Grosch and G. Martinat (2014) "Large-eddy simulation of open channel flow with surface cooling", International Journal of Heat and Fluid Flow, 50, 209-224.*
18. *Zhang, J., A. E. Tejada-Martínez and Q. Zhang (2014) "Developments in computational fluid dynamics-based modeling for disinfection technologies over the last two decades: A review", Environmental Modelling & Software, 59, 71-85.*
19. *Zhang, J., A. E. Tejada-Martínez and Q. Zhang (2014) "Evaluation of LES and RANS for determining hydraulic performance of disinfection systems for water treatment", ASME Journal of Fluids Engineering, 136, 121102 (9 pages).*
20. *Zhang, J., A. E. Tejada-Martínez, Q. Zhang and H. Lei (2014) "Evaluating hydraulic and disinfection efficiencies of a full-scale ozone contactor using a RANS-based modeling framework", Water Research, 52, 155-167.*
21. *Verbyla, M. E., S. M. Oakley, M. Iriarte, L. A. Lizima, J. Zhang, A.E. Tejada-Martínez and J.R. Mihelcic (2013) "Taenia eggs in a stabilization pond system with poor hydraulics: Concern for human cysticercosis", Water Science and Technology, 68, 2698-2703. University Press.*
22. *Zhang, J., A. E. Tejada-Martínez and Q. Zhang (2013) "Hydraulic efficiency in RANS of the flow in a multi-chambered ozone contactor", Journal of Hydraulic Engineering, 139, 1150-1157.*
23. *Tejada-Martínez, A. E., C. Akan, N. Sinha, C.E. Grosch and G. Martinat (2013) "Surface dynamics in LES of full-depth Langmuir circulation in shallow water", Physica Scripta, T155, 014008.*
24. *C. Akan, A. E. Tejada-Martínez, C. E. Grosch and G. Martinat (2013) "Scalar transport in LES of Langmuir turbulence in shallow water", Continental Shelf Research, 55, 1-16.*
25. *Zhang, J., A. E. Tejada-Martínez and Q. Zhang (2013) "RANS simulation of the flow and tracer transport in a multi-chambered ozone contactor", ASCE Journal of Environmental Engineering, 139, 450-454.*
26. *Tejada-Martínez, A. E., C. E. Grosch, N. Sinha, C. Akan and G. Martinat (2012) "Disruption of bottom log-layer in LES of full-depth Langmuir circulation", Journal of*

*Fluid Mechanics*, 699, 79-93.

27. **Tejada-Martínez, A. E.**, I. Akkerman and Y. Bazilevs (2012), "Large-eddy simulation of shallow water Langmuir turbulence using isogeometric analysis and the residual-based variational multiscale method", *Journal of Applied Mechanics*, 79, 010909-1 – 010909-12.
28. Martinat, G., Y. Xu, C.E. Grosch and **A. E. Tejada-Martínez** (2011) "LES of turbulent shear flow and pressure gradient driven flow on shallow continental shelves", *Ocean Dynamics*, 9, 1369-1390.
29. **Tejada-Martínez, A. E.**, C. Akan and C. E. Grosch (2011) "Mass transfer at the surface in LES of wind-driven shallow water flow with Langmuir circulation", in *Gas Transfer at Water Surfaces*, edited by S. Komori, W. McGillis and R. Kurose, Kyoto University Press.
30. Thais, L., **A. E. Tejada-Martínez**, T. B. Gatski and G. Mompean (2011), "A massively parallel hybrid scheme for direct numerical simulation of turbulent viscoelastic channel flow", *Computers and Fluids*, 43, 134-142.
31. **Tejada-Martínez, A. E.**, C. Borberg, R. Venugopal, C. E. Carballo, W. Moreno and R. Quintero (2011), "Computational fluid dynamic analysis of flow velocity notching in umbilical arteries", *American Journal of Physiology - Regulatory, Integrative and Comparative Physiology*, 300, R76-R84.
32. Thais, L., **A. E. Tejada-Martínez**, T. B. Gatski, G. Mompean and H. Naji (2010) "Direct and large eddy numerical simulations of turbulent visco-elastic drag reduction", in *Wall Turbulence: Understanding and Modeling Progress*, edited by M. Stanislas, J. Jimenez, and I. Marusic (Editors), Springer-Verlag, 421-428.
33. Thais, L., **A. E. Tejada-Martínez**, T. B. Gatski and G. Mompean (2010) "Temporal large eddy simulations of turbulent viscoelastic drag reduction flows", *Physics of Fluids*, 22, 013103.
34. **Tejada-Martínez, A. E.**, C. E. Grosch, A. E. Gargett, J. A. Polton, J. A. Smith and J. A. MacKinnon (2009) "A hybrid spectral/finite-difference large-eddy simulator of turbulent processes in the upper ocean", *Ocean Modelling*, 30, 115-142.
35. Gargett, A. E., **A. E. Tejada-Martínez** and C. E. Grosch (2009) "Measuring turbulent large eddy structures with an ADCP. 2. Horizontal velocity variances", *Journal of Marine Research*, 67, 569-595, 2009.
36. Trofimova, A., **A. E. Tejada-Martínez**, K. E. Jansen and R. T. Lahey Jr. (2009) "Direct numerical simulation of turbulent channel flows using a stabilized finite element method", *Computers & Fluids*, 38, 924-938.
37. Gargett, A. E., **A. E. Tejada-Martínez** and C. E. Grosch (2008) "Measuring turbulent large eddy structures with an ADCP. 1. Vertical velocity variance", *Journal of Marine Research*, 33, 157-189.
38. Polton, J. A., J. A. Smith, J. A. MacKinnon and **A. E. Tejada-Martínez** (2008) "Rapid generation of high-frequency internal waves beneath a wind and wave forced oceanic surface mixed-layer", *Geophysical Research Letters*, 35, L13602.
39. **Tejada-Martínez, A. E.** and C. E. Grosch (2007) "Langmuir turbulence in shallow water: Part II. Large-eddy simulation", *Journal of Fluid Mechanics*, 576, 63-108.
40. **Tejada-Martínez, A. E.**, C. E. Grosch and T. B. Gatski (2007) "Temporal large-eddy simulation of unstratified and stratified turbulent channel flows", *International Journal of Heat and Fluid Flow*, 28, 1244-1261.

41. **Tejada-Martínez, A. E.** and K. E. Jansen (2006) “A parameter-free dynamic subgrid-scale model for large-eddy simulation”, *Computer Methods in Applied Mechanics and Engineering*, 195, 2919-2938.
42. **Tejada-Martínez, A. E.** and K. E. Jansen (2005) “On the interaction between dynamic model dissipation and numerical dissipation due to streamline upwind / Petrov-Galerkin stabilization”, *Computer Methods in Applied Mechanics and Engineering*, 194, 1225-1248.
43. Gargett, A.E., J.R. Wells, **A. E. Tejada-Martínez** and C.E. Grosch (2004) “Langmuir supercells: A dominant mechanism for sediment resuspension and transport”, *Science*, 306, 1925-1928.
44. **Tejada-Martínez, A. E.** and K.E. Jansen (2004) “A dynamic Smagorinsky model with dynamic determination of the filter width ratio”, *Physics of Fluids*, 16, 2514-2528.
45. **Tejada-Martínez, A. E.** and K.E. Jansen (2003) “Spatial test filters for dynamic model large-eddy simulation with finite elements”, *Communications in Numerical Methods in Engineering*, 19, 205-213.

### Manuscripts in review/preparation

46. *Hafsi A.*, **A. E. Tejada-Martínez** and F. Veron, “Shear turbulence, Langmuir circulation and scalar transfer at an air-water interface”, submitted to *Journal of Fluid Mechanics*.
47. Brereton, A., **A. E. Tejada-Martínez** and J. A. Polton, “The perturbation method: A novel large-eddy simulation methodology”, submitted to *Ocean Modelling*.
48. Adithya, P. C., R. Sankar, S. Hart, **A. E. Tejada-Martínez** and W. A. Moreno, “A novel catheter stethoscope for critical care: A feasibility study”, in preparation.
49. *Zhang J.* and **A. E. Tejada-Martínez**, “Wind, wave and tidal-driven turbulence in a coastal ocean”, in preparation.
50. Martinat, G., C. E. Grosch, **A. E. Tejada-Martínez** and A. E. Gargett, “The effect of stable stratification on Langmuir turbulence in shallow water”, in preparation.

### Conference papers

1. Trappuzano, M., R. Guldiken, **A. E. Tejada-Martínez** and N. Crane (2018a) “Forced wetting of liquids using ultrasonic surface vibration”, *Proceedings of the ASME 2018 International Mechanical Engineering Congress & Exposition (IMECE2018)*, Pittsburgh, PA.
2. Trappuzano, M., R. Guldiken, **A. E. Tejada-Martínez** and N. Crane (2018b) “Degradation of hydrophobic surface coatings under water exposure”, *Proceedings of the ASME 2018 International Mechanical Engineering Congress & Exposition (IMECE2018)*, Pittsburgh, PA.
3. *Pierre, K. C.*, *N. Sinha*, T. Pirasaci, J. Zhang, G. Iranipour, L. Mulford, A. Sunol and **A. E. Tejada-Martínez**, Residence time analysis and unsteady flow effects in an oxidation ditch, *EWRI World Environmental and Water Resources Congress*, 2018 (8 pages).
4. *Jeyaraj, J.*, **A. E. Tejada-Martínez** and G. Mullins, Numerical modelling of concrete flow in drilled shaft, *Proceedings of the 2017 COMSOL Conference*, Boston, MA (7 pages).
5. *Ouedraogo, F.*, *J. Zhang* and **A. E. Tejada-Martínez**, Improving the hydraulic performance of waste stabilization pond via inlet retrofit, *EWRI World Environmental*

- and Water Resources Congress, 2017 (10 pages).
6. Ouedraogo, F., P. Cornejo-Warner, J. Zhang, **A. E. Tejada-Martínez**, Q. Zhang and J. R. Mihelcic, CFD analysis of the circulation in a waste stabilization pond with sludge accumulation”, *EWRI World Environmental and Water Resources Congress*, 2016 (10 pages).
  7. Kinyua, M. N., J. Zhang, **A. E. Tejada-Martínez** and S. J. Ergas, Influence of mean residence time, mixing and transport mechanisms on the performance of small-scale anaerobic digesters in the Monteverde Region of Costa Rica, *Water and Energy 2015: Opportunities for Energy and Resource Recovery in the Changing World*, 2015.
  8. Rahman, R., R. Jayaratne, **A. E. Tejada-Martínez** and P. Wang, Numerical investigation of beach profile evolution using a new sediment concentration model, *Proceedings of Coastal Sediments 2015*.
  9. **Tejada-Martínez, A. E.**, R. Golshan, I. Akkerman and Y. Bazilevs, “LES of wind and wave-forced oceanic boundary layers using variational multiscale methods and near-wall modeling”, *11<sup>th</sup> World Congress on Computational Mechanics*, 2014 (11 pages).
  10. Martinat, G., **A. E. Tejada-Martínez** and C. E. Grosch, “LES of Langmuir turbulence in stably stratified”, *Proceedings of the Eight International Symposium on Turbulence and Shear Flow Phenomena*, 2013 (6 pages).
  11. Martinat, G., **A. E. Tejada-Martínez** and C. E. Grosch, “LES of turbulent surface shear stress and pressure gradient driven flow on shallow continental shelves”, *Proceedings of the Seventh International Symposium on Turbulence and Shear Flow Phenomena*, 2011 (6 pages).
  12. **Tejada-Martínez, A. E.**, C.E. Grosch and T. B. Gatski, "Temporal large-eddy simulation of unstratified and stratified turbulent channel flows", *Proceedings of the Fifth Symposium on Turbulence, Heat and Mass Transport*, Eds. K. Hanjalic, Y. Nagano, and S. Jankirlic, 2006 (12 pages).
  13. **Tejada-Martínez, A. E.** and C. Mendoza, "Alternating bars in transcritical flow", *Proceedings of the Seventh International Conference on Hydroscience and Engineering*, 2006 (10 pages).
  14. **Tejada-Martínez, A. E.** and C.E. Grosch, "The structure of turbulence in a shallow water wind-driven shear current with Langmuir circulation", *Proceedings of the Fourth International Symposium on Turbulence and Shear Flow Phenomena*, Eds. J. A. C. Humphrey, T. B. Gatski, J. K. Eaton, R. Friedrich, N. Kasagi and M. A. Leschzimer, 1, 339-354, 2005.
  15. Jansen, K.E. and **A. E. Tejada-Martínez**, "An evaluation of the variational multiscale model for large-eddy simulation while using a hierarchical basis", *40th AIAA Aerospace Sciences Meeting and Exhibit*, AIAA Paper 2002-0283, 2002 (12 pages).

### Conference abstracts

16. **A. E. Tejada-Martínez**, A. Hafsi and F. Veron, “DNS and LES of scalar transfer across a wind-driven air-water interface characterized by gravity-capillary waves”, *13<sup>th</sup> World Congress on Computational Mechanics*, New York, NY, July 2018.
17. K. Rathore, K. Pierre, K. Cogswell, A. Driscoll, **A. E. Tejada-Martínez**, G. Iranipour, L. Mulford and A. Sunol, “A hybrid of BioWin and computational fluid dynamics-based modeling of biological wastewater treatment plants for model-based control”, *20<sup>th</sup> International Conference on Biological Wastewater Treatment and*



- Biotechnology*, Austria, Vienna, June 2018.
18. K. Rathore, K. Pierre, K. Cogswell, A. Driscoll, A. Sunol, **A. E. Tejada-Martínez**, G. Iranipour, L. Mulford, "Integration of computational dynamics, data analysis tools and process simulation for modeling of waste water treatment plants", *AICHE Spring Meeting and Global Congress on Process Safety*, Orlando, FL, April 2018.
  19. A. Driscoll, K. Rathore, K. Pierre, K. Cogswell, A. Sunol, **A. E. Tejada-Martínez**, G. Iranipour and L. Mulford, "Development of process operating policies and control using flowsheet simulators, plant SCADA and CFD", *AICHE Spring Meeting and Global Congress on Process Safety*, Orlando, FL, April 2018.
  20. A. Brereton, J.A. Polton and **A. E. Tejada-Martínez**, "Stratified and unstratified mixing: A large-eddy simulation investigation", *2018 Ocean Sciences Meeting*, Portland, OR, February 2018.
  21. **A. E. Tejada-Martínez** and J. Zhang, "Langmuir circulation in unstratified water under misaligned winds/waves and net current", *2018 Ocean Sciences Meeting*, Portland, OR, February 2018.
  22. A. Brereton, **A. E. Tejada-Martínez** and J. A. Polton, "Driving turbulence by generic mean flow – A new model formulation for large eddy simulation", *70<sup>th</sup> Annual Meeting of the American Physical Society / Division of Fluid Dynamics*, Denver, CO, November 2017.
  23. **A. E. Tejada-Martínez** and J. Zhang, "Interaction between Langmuir circulation and the bottom boundary layer in shallow water", *70<sup>th</sup> Annual Meeting of the American Physical Society / Division of Fluid Dynamics*, Denver, CO, November 2017.
  24. **A. E. Tejada-Martínez** and J. Zhang, "Langmuir supercells influenced by crosswind currents", *Waves, Internal Waves and Oceanic Mixing Workshop*, Bangor, Wales, July 2017
  25. **A. E. Tejada-Martínez**, A. Hafsi and F. Veron, "Stokes drift induced by gravity-capillary waves and its impact on scalar transfer across an air-water interface", *Engineering Mechanics Institute Conference*, San Diego, CA, June 2017.
  26. **A. E. Tejada-Martínez** and M. Boufadel, "Modeling turbulence underneath non-breaking waves", *2017 Gulf of Mexico Oil Spill and Ecosystem Science Conference*, New Orleans, LA, February 2017.
  27. **A. E. Tejada-Martínez** and J. Zhang, "Non-local transport in LES of Langmuir supercells under tidal forcing", *2017 Gulf of Mexico Oil Spill and Ecosystem Science Conference*, New Orleans, LA, February 2017.
  28. S. Matt, I. Savelyev, W. Hou and **A. E. Tejada-Martínez**, "Turbulence and dispersion associated with near-surface coherent structures in laboratory-scale Langmuir Circulation", *2017 Gulf of Mexico Oil Spill and Ecosystem Science Conference*, New Orleans, LA, February 2017.
  29. A. Fernandez, **A. E. Tejada-Martínez** and M. Juha, "Multiscale simulations of a horizontal axis tidal turbine in a tidal site", *Bulletin of the American Physical Society / 69<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Portland, OR, November 2016.
  30. A. Hafsi, **A. E. Tejada-Martínez** and F. Veron, "Shear turbulence, Langmuir circulation and scalar transfer at an air-water interface", *Bulletin of the American Physical Society / 67<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Portland, OR, November 2016.
  31. **A. E. Tejada-Martínez** and J. Zhang, "Analysis of Reynolds stress budgets in LES of Langmuir supercells under crosswind currents in a coastal ocean", *Bulletin of the American Physical Society / 69<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Portland, OR, November 2016.
  32. J. Zhang, **A. E. Tejada-Martínez**, H. Lei and Q. Zhang, "Assess and improve the

- sustainability of water treatment facility using computational fluid dynamics”, *Bulletin of the American Physical Society / 69<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Portland, OR, November 2016.
33. M. Trapuzzano, K. Pierre, E. Tufekcioglu, R. Guldiken, **A.E. Tejada-Martínez** and N. Crane, “Comparison of simulated and measured fluid-surface oscillation frequencies in a channel”, *Bulletin of the American Physical Society / 69<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Portland, OR, November 2016.
  34. A. Hafsi, **A. E. Tejada-Martínez**, F. Veron and Y. Ma, “DNS of scalar transfer across an air-water interface during inception and growth of Langmuir circulation”, 2016 Ocean Sciences Meeting, New Orleans, LA, February 2016.
  35. **A. E. Tejada-Martínez**, R. Walker, J. Zhang and C.E. Grosch, “Large-eddy simulation (LES) of Langmuir supercells under constant surface cooling or heating”, 2016 Ocean Sciences Meeting, New Orleans, LA, February 2016.
  36. J. Zhang, R. Walker, M. Juha, C.E. Grosch and **A. E. Tejada-Martínez**, “LES of Langmuir supercells under constant and oscillating crosswind tidal forcing”, 2016 Gulf of Mexico Oil Spill and Ecosystem Science Conference, Tampa, FL, February 2016.
  37. **A. E. Tejada-Martínez**, R. Walker, J. Zhang and C.E. Grosch, “Large-eddy simulation (LES) of Langmuir supercells under constant surface cooling or heating”, 2016 Gulf of Mexico Oil Spill and Ecosystem Science Conference, Tampa, FL, February 2016.
  38. R. Walker, J. Zhang, M. Juha, C.E. Grosch and **A. E. Tejada-Martínez**, “LES of Langmuir supercells under constant crosswind tidal forcing”, *Bulletin of the American Physical Society / 68<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Boston, MA, November 2015.
  39. A. Hafsi, **A. E. Tejada-Martínez**, F. Veron and Y. Ma, “DNS of scalar transfer across an air-water interface during inception and growth of Langmuir circulation”, *Bulletin of the American Physical Society / 68<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Boston, MA, November 2015.
  40. Y. Ma, F. Veron, **A. E. Tejada-Martínez** and A. Hafsi, “Laboratory measurements of the inception evolution of Langmuir turbulence”, *Bulletin of the American Physical Society / 68<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Boston, MA, November 2015.
  41. M. Juha, J. Zhang and **A. E. Tejada-Martínez**, “LES of oscillating boundary layers under neutrally stratified and unstably stratified conditions”, *Bulletin of the American Physical Society / 68<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Boston, MA, November 2015.
  42. R. Golshan, **A. E. Tejada-Martínez** and Y. Bazilevs, “Large-eddy simulation with near-wall modeling based on weakly enforced no-slip boundary conditions”, 13<sup>th</sup> US National Congress on Computational Mechanics, San Diego, CA, July 2015.
  43. C. Akan, N. Sinha and **A. E. Tejada-Martínez**, “A K-profile parameterization of vertical mixing induced by Langmuir turbulence in shallow water”, 13<sup>th</sup> US National Congress on Computational Mechanics, San Diego, CA, July, 2015.
  44. A. Hafsi, Y. Ma, M. Buckley, **A. E. Tejada-Martínez** and F. Veron, “DNS and measurements of scalar transfer across an air-water interface during inception and growth of Langmuir circulation”, 7<sup>th</sup> International Symposium on Gas Transfer at Water Surfaces, Seattle, WA, May 2015.
  45. R. Walker, **A. E. Tejada-Martínez** and C. E. Grosch, “Large-eddy simulation of full-depth Langmuir circulation with surface cooling”, *Bulletin of the American Physical Society / 67<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, San Francisco, CA,

November 2014.

46. A. Hafsi and **A. E. Tejada-Martínez**, “DNS of scalar transport across a wind-driven air-water interface”, *Bulletin of the American Physical Society / 67<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, San Francisco, CA, November 2014.
47. **A. E. Tejada-Martínez**, R. Golshan, I. Akkerman and Y. Bazilevs, “LES of wind and wave-forced oceanic boundary layers using variational multiscale methods and near-wall modeling”, *11<sup>th</sup> World Congress on Computational Mechanics*, Barcelona, Spain, July 2014.
48. **A. E. Tejada-Martínez**, N. Sinha, C. E. Grosch and G. Martinat, “A K-profile parameterization of Langmuir turbulence in shallow water”, *2014 Ocean Sciences Meeting*, Honolulu, HI, February 2014.
49. **A. E. Tejada-Martínez**, N. Sinha, C.E. Grosch and G. Martinat, “A K-profile parameterization of Langmuir turbulence in shallow water”, *2014 Gulf of Mexico Oil Spill and Ecosystem Science Conference*, Mobile, AL, January 2014.
50. **A. E. Tejada-Martínez**, N. Sinha, C. E. Grosch and G. Martinat, “LES of full-depth Langmuir circulation in a crosswind tidal current”, *Bulletin of the American Physical Society / 66<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Pittsburgh, PA, November 2013.
51. N. Sinha, **A. E. Tejada-Martínez**, C. E. Grosch and G. Martinat, “A K-profile parameterization of Langmuir turbulence in shallow water”, *Bulletin of the American Physical Society / 66<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Pittsburgh, PA, November 2013.
52. M. E. Verbyla, S. M. Oakley, M. Iriarte, L. A. Lizima, J. Zhang, **A. E. Tejada-Martínez** and J. R. Mihelcic. “The removal of Taenia and Ascaris eggs from waste stabilization ponds and the impact of pond hydraulics”, *10th IWA Specialist Group Conference on Ponds Technology: Advances and Innovations in Wastewater Pond Technology*, Cartagena, Colombia, August 2013.
53. G. Martinat, **A. E. Tejada-Martínez** and C. E. Grosch, “LES of Langmuir turbulence in stably stratified flow”, *Eight international Symposium on Turbulence and Shear Flow Phenomena*, Poitiers-Futuroscope, France, August 2013.
54. **A. E. Tejada-Martínez**, R. Golshan, I. Akkerman and Y. Bazilevs, “A residual-based variational multiscale method for the Craik-Leibovich equations” *Advances in Computational Mechanics*, San Diego, CA, February 2013.
55. N. Sinha, **A. E. Tejada-Martínez**, C. E. Grosch and G. Martinat, “Evaluation of turbulence models in RANSS of wind-driven flow with full-depth Langmuir circulation”, *Bulletin of the American Physical Society / 65<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, San Diego, CA, November 2012.
56. **A. E. Tejada-Martínez**, C. Akan, C. E. Grosch and G. Martinat, “Scalar transport in large eddy simulation of Langmuir turbulence in shallow water”, *Bulletin of the American Physical Society / 65<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, San Diego, CA, November 2012.
57. R. Walker, **A. E. Tejada-Martínez**, C. E. Grosch and G. Martinat, “Large-eddy simulation of open channel flow with surface cooling”, *Bulletin of the American Physical Society / 65<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, San Diego, CA, November 2012.
58. G. Martinat, C. E. Grosch and **A. E. Tejada-Martínez**, “POD analysis of Langmuir circulation interacting with a crossed pressure gradient driven flow”, *Bulletin of the*

- American Physical Society / 65<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, San Diego, CA, November 2012.
59. J. Zhang, **A. E. Tejada-Martínez** and Q. Zhang. "Flow and tracer transport simulation in a multi-chambered ozone contactor using RANS", *ASME 2012 International Mechanical Engineering Congress & Exposition (IMECE)*, Houston, TX, November 2012.
  60. C. Akan, **A. E. Tejada-Martínez** and C. E. Grosch, "Surface mass transfer in LES of large scale and small scale Langmuir circulation", *2012 Ocean Sciences Meeting*, Salt Lake City, UT, February 2012.
  61. N. Sinha, **A. E. Tejada-Martínez** and C. E. Grosch, "Evaluation of the k-epsilon model in simulations of full-depth Langmuir circulation", *2012 Ocean Sciences Meeting*, Salt Lake City, UT, February 2012.
  62. **A. E. Tejada-Martínez**, C. Akan, R. Smyth and P. Neale, "LES of upper ocean Langmuir turbulence: Impact of wavelength on surface waves", *2012 Ocean Sciences Meeting*, Salt Lake City, UT, February 2012.
  63. C. Akan, **A. E. Tejada-Martínez** and C. E. Grosch, "Surface mass transfer in LES of large scale and small scale Langmuir circulation", *2012 Ocean Sciences Meeting*, Salt Lake City, UT, February 2012.
  64. R. Smyth, P. Neale, C. Akan and **A. E. Tejada-Martínez**, "Interaction between vertical mixing and UV inhibition of phytoplankton photosynthesis in the Ross Sea Polynya: A large eddy simulation study", *2012 Ocean Sciences Meeting*, Salt Lake City, UT, February 2012.
  65. G. Martinat, **A. E. Tejada-Martínez** and C. E. Grosch, "Influence of a crossed tidal current on a wind shear driven flow in shallow water with and without wave forcing by means of LES", *Bulletin of the American Physical Society / 64<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Baltimore, MD, November 2011.
  66. C. Akan, **A. E. Tejada-Martínez** and C. E. Grosch, "LES of scalar transport in wave and wind-driven flows with large-scale structures", *Bulletin of the American Physical Society / 64<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Baltimore, MD, November 2011.
  67. **A. E. Tejada-Martínez**, G. Martinat, R. Walker and C. E. Grosch, "Large-eddy simulation of large-scale convection cells in unstably stratified channel flow", *Bulletin of the American Physical Society / 64<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Baltimore, MD, November 2011.
  68. N. Sinha, **A. E. Tejada-Martínez** and C. E. Grosch, "Disruption of bottom log-layer in LES of Langmuir circulation in shallow seas", *Bulletin of the American Physical Society / 64<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Baltimore, MD, November 2011.
  69. **A. E. Tejada-Martínez**, "LES of full-depth Langmuir circulation and its impact on bottom boundary layer dynamics and scalar transport", *Proceedings of Turbulent Mixing and Beyond, Third International Conference*, Trieste, Italy, August 2011.
  70. **A. E. Tejada-Martínez**, I. Akkerman and Y. Bazilevs, "Large-eddy simulation of shallow water Langmuir turbulence using isogeometric analysis and the residual-based variational multiscale method", *Proceedings of the 11<sup>th</sup> U.S. National Congress on Computational Mechanics*, Minneapolis, MN, July 2011.
  71. C. Akan, **A. E. Tejada-Martínez** and C. E. Grosch, "LES of scalar transport in wave and wind-driven flows with large-scale structures", *Bulletin of the American Physical*

- Society / 63<sup>rd</sup> Annual Meeting of the Division of Fluid Dynamics, Long Beach, CA, November 2010.*
72. **A. E. Tejada-Martínez**, "Large-eddy simulation of the upper ocean mixed layer", *Bulletin of the American Physical Society / 63<sup>rd</sup> Annual Meeting of the Division of Fluid Dynamics, Long Beach, CA, November 2010.*
  73. G. Martinat, C.E. Grosch and **A. E. Tejada-Martínez**, "LES of turbulent stratified flows on shallow continental shelves", *Bulletin of the American Physical Society / 63<sup>rd</sup> Annual Meeting of the Division of Fluid Dynamics, Long Beach, CA, November 2010.*
  74. **A. E. Tejada-Martínez**, I. Akkerman, Y. Bazilevs, V. Calo and J. Principe, "Large-eddy simulation of upper ocean turbulent mixing using isogeometric analysis and the residual-based variational multiscale method", *9<sup>th</sup> World Congress on Computational Mechanics and 4<sup>th</sup> Asian-Pacific Congress on Computational Mechanics, Sidney, Australia, July 2010.*
  75. L. Thais, **A. E. Tejada-Martínez**, T. B. Gatski and G. Mompean, "High Reynolds number direct numerical simulation of polymer-induced drag reduction", *XVI<sup>th</sup> International Workshop on Numerical Methods for Non-Newtonian Flows, Northampton, MA, June 2010.*
  76. **A. E. Tejada-Martínez**, C. Akan and C. E. Grosch, "Mass transfer at the surface in LES of wind-driven shallow water flow with Langmuir circulation", *The 6<sup>th</sup> International Symposium on Gas Transfer at Water Surfaces, Kyoto, Japan, May 2010.*
  77. **A. E. Tejada-Martínez**, C. E. Grosch, A. E. Gargett, J. A. Polton, J. A. Smith and J. A. MacKinnon, "Subgrid-scale modeling in large-eddy simulation of the upper ocean mixed layer", *2010 Ocean Sciences Meeting, Portland, OR, February 2010.*
  78. C. Akan, **A. E. Tejada-Martínez** and C. E. Grosch, "Impact of Langmuir circulation on mass transfer across the air-sea interface", *2010 Ocean Sciences Meeting, Portland, OR, February 2010.*
  79. **A. E. Tejada-Martínez**, C. Borberg, R. Venugopal, C.E. Carballo, W. Moreno and R. Quintero, "Computational fluid dynamics analysis of flow velocity waveforms in a constricted pulsatile channel", *VIII Annual Meeting of the Iberoamerican Society for Prenatal Diagnosis and Therapy, Miami, FL, December 2009.*
  80. **A. E. Tejada-Martínez** and C. E. Grosch, "Disruption of bottom-generated turbulence by full-depth Langmuir circulation", *ASME International Mechanical Engineering Congress, Lake Buena Vista, FL, November 2009.*
  81. V. M. Calo, **A. E. Tejada-Martínez** and J. Principe, "Variational multiscale modeling of turbulent processes in the upper ocean", *ASME International Mechanical Engineering Congress, Lake Buena Vista, FL, November 2009.*
  82. **A. E. Tejada-Martínez**, "Large-eddy simulation of the wind-driven upper ocean mixed layer", *10<sup>th</sup> U.S. National Congress on Computational Mechanics, Columbus, OH, July 2009.*
  83. **A. E. Tejada-Martínez**, L. Thais, T. B. Gatski and G. Mompean, "Direct and large eddy numerical simulations of viscoelastic drag reduction", *Turbulence Interactions 2009, St. Luce, Martinique, May 2009.*
  84. L. Thais, **A. E. Tejada-Martínez**, T.B. Gatski, G. Mompean and H. Naji, "Direct and large eddy numerical simulations of viscoelastic drag reduction", *WALLTURB Workshop 2009: An European Synergy for the Assessment of Wall Turbulence, Lille, France, April 2009.*

85. **A. E. Tejada-Martínez** and C. E. Grosch, “Budgets of Reynolds stress and turbulent kinetic energy in LES of Langmuir circulation in shallow water”, *Bulletin of the American Physical Society / 61<sup>st</sup> Annual Meeting of the Division of Fluid Dynamics*, San Antonio, TX, November 2008.
86. C. Akan and **A. E. Tejada-Martínez**, “Gas transfer through the air-water interface in LES of Langmuir circulation in shallow water”, *Bulletin of the American Physical Society / 61<sup>st</sup> Annual Meeting of the Division of Fluid Dynamics*, San Antonio, TX, November 2008.
87. L. Thais, G. Mompean, **A. E. Tejada-Martínez** and T. B. Gatski, “Numerical simulation of turbulent drag reduction”, *43<sup>rd</sup> Meeting of the French Rheology Group*, Paris, France, October 2008.
88. **A. E. Tejada-Martínez**, A. E. Gargett and C. E. Grosch, “ADCP measurements within a large-eddy simulator of Langmuir turbulence in shallow water”, *2008 Ocean Sciences Meeting*, Orlando, FL, March 2008.
89. **A. E. Tejada-Martínez**, A. Trofimova, K. E. Jansen and R. T. Lahey, “Convergence studies of turbulent channel flows using a stabilized finite element method”, *Proceedings of the 9<sup>th</sup> U.S. National Congress on Computational Mechanics*, San Francisco, CA, July 2007.
90. J. A. Polton, J. A. Smith, J. A. MacKinnon, **A. E. Tejada-Martínez** and S. Belcher, “LES of Langmuir circulations in unstratified and stratified upper oceans”, *International Union of Geodesy and Geophysics XXIV*, Perugia, Italy, July 2007.
91. L. Thais, **A. E. Tejada-Martínez**, T. B. Gatski and G. Mompean, “Direct and large eddy numerical simulations of FENE-P drag reduction”, *XV<sup>th</sup> International Workshop on Numerical Methods for Non-Newtonian Flows*, Rhodes, Greece, June 2007.
92. **A. E. Tejada-Martínez** and C. E. Grosch, “Large-eddy simulation of Langmuir turbulence in shallow water”, *2006 Ocean Sciences Meeting*, Honolulu, HI, March 2006.
93. **A. E. Tejada-Martínez** and C. E. Grosch, “Large eddy simulation of Langmuir circulation in shallow water”, *Bulletin of the American Physical Society / 58<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Chicago, IL, November 2005.
94. **A. E. Tejada-Martínez** and K. E. Jansen, “A dynamic Smagorinsky model with dynamic determination of the filter width ratio”, *Bulletin of the American Physical Society / 56<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Meadowlands, NJ, November 2003.
95. S. P. Simmons, **A. E. Tejada-Martínez** and K.E. Jansen, “An application of variational multiscale methods using a hierarchical basis to compute turbulent flows”, *Bulletin of the American Physical Society / 56<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Meadowlands, NJ, November 2003.
96. K. E. Jansen and **A. E. Tejada-Martínez**, “LES modeling with a stabilized finite element method”, *Proceedings of the 7<sup>th</sup> U.S. National Congress on Computational Mechanics*, Albuquerque, NM, July 2003.
97. **A. E. Tejada-Martínez** and K. E. Jansen, “On the interaction between dynamic model dissipation and numerical dissipation due to SUPG stabilization”, *Proceedings of the 7<sup>th</sup> U.S. National Congress on Computational Mechanics*, Albuquerque, NM, July 2003.
98. K. E. Jansen and **A. E. Tejada-Martínez**, “The effect of topology and scale decomposition when using variational multiscale LES”, *U.S. National Congress on*

*Theoretical and Applied Mechanics*, Blacksburg, VA, July 2002.

99. K. E. Jansen and **A. E. Tejada-Martínez**, "An evaluation of the hierarchical basis for use in variational multiscale methods for LES", *Proceedings of the 5<sup>th</sup> World Congress on Computational Mechanics*, Vienna, Austria, July 2002.
100. **A. E. Tejada-Martínez** and K. E. Jansen, "A comparison of the dynamic model and the variational multiscale model for large-eddy simulation", *Proceedings of the 6<sup>th</sup> U.S. National Congress on Computational Mechanics*, Dearborn, MI, July 2001.
101. **A. E. Tejada-Martínez** and K. E. Jansen, "An examination of the filtering operator used in dynamic model LES", *Finite Elements in Flow Problems*, Austin, TX, July 2000.
102. **A. E. Tejada-Martínez** and K. E. Jansen, "Test filters for dynamic model LES on finite elements", *Bulletin of the American Physical Society / 53<sup>th</sup> Annual Meeting of the Division of Fluid Dynamics*, Washington, D.C., November 2000.
103. **A. E. Tejada-Martínez** and K. E. Jansen, "The effect of element topology and filter type on the dynamic model for large-eddy simulation", *Bulletin of the American Physical Society / 51<sup>st</sup> Annual Meeting of the Division of Fluid Dynamics*, Philadelphia, PA, November 1998.

### Invited seminars/keynotes

1. National Oceanography Center, Liverpool, UK, July, 2017.
2. 7th International Conference on Computational Methods, University of California, Berkeley, August 2016. **Keynote speaker.**
3. University of California, Los Angeles, Oceanic Research Group, Department of Atmospheric and Oceanic Sciences, July, 2015.
4. National Oceanography Centre, Liverpool, UK, August, 2014.
5. *National Wind Resource Center Summer Seminar Series*, Texas Tech, July, 2013.
6. Department of Civil and Coastal Engineering, University of Florida, Gainesville, FL, March 2012.
7. *Third International Congress of Energy, Materials and Environmental Issues*, Universidad Autonoma del Caribe, Barranquilla, Colombia, November, 2011. **Keynote speaker.**
8. *Turbulent Mixing and Beyond, Third International Conference*, Trieste, Italy, August, 2011.
9. Department of Mechanical, Aerospace and Nuclear Engineering, Rensselaer Polytechnic Institute, May 2011.
10. College of Marine Science, University of South Florida, St. Petersburg, FL, September, 2010.
11. *Day of the Engineer*, Universidad Veracruzana, Veracruz, Mexico, May 2010. **Keynote speaker.**
12. Department of Mechanical, Aerospace and Nuclear Engineering, Rensselaer Polytechnic Institute, February 2009.
13. Department of Ocean Engineering, Florida Institute of Technology, Melbourne, FL, October 2008.
14. Department of Civil and Coastal Engineering, University of Florida, Gainesville, FL, October 2007.
15. Environmental Research Interdisciplinary Colloquium, University of South Florida, Tampa, FL, January 2007.
16. Laboratoire de Mecanique de Lille, Universitat des Sciences et Technologies de Lille,

- Lille, France, September 2006.
17. Laboratoire d'etudes Aerodynamiques, UMR 6609 CNRS, Universitat de Poitiers, Poitiers, France, September 2006.
  18. School of Civil and Environmental Engineering, Georgia Institute of Technology, Atlanta, GA, March 2006.
  19. Department of Civil and Environmental Engineering, University of South Florida, Tampa, FL, March 2006.
  20. San Diego Supercomputer Center, University of California, San Diego, CA, December 2005.
  21. Scripps Institution of Oceanography, University of California, San Diego, CA, November 2005.
  22. School of Civil and Environmental Engineering, Cornell University, Ithaca, NY, April 2005.
  23. Institute for Computational Engineering Sciences, University of Texas, Austin, TX, March 2005.
  24. Department of Mechanical Engineering, University of British Columbia, Vancouver, Canada, March 2005.
  25. Department of Mathematics, Montclair State University, Montclair, NJ, February 2005.

#### **Post-doctoral scholars supervised**

1. Dr. Jie Zhang (August 2014 – October 2017) – Currently at Corollo Engineers, Seattle, WA
2. Dr. Mario Juha (April 2013 – October 2015) – Currently associate professor at Universidad de la Sabana, Chia, Colombia

#### **Ph.D. students supervised**

1. Srujana Sarvepalli (August 2018 – present)
2. Faissal Ouedraogo (August 2015 – present)
3. Kiesha Pierre (August 2015 – present)
4. Jesudoss Jeyaraj (October 2016 – present)
5. Cigdem Akan (August 2007 – June 2012; “Surface mass transfer in LES of Langmuir turbulence”) – Currently assistant professor at University of North Florida
6. Nityanand Sinha (August 2009 – December 2013; “Towards RANS parameterization of Langmuir turbulence in Shallow Coastal Shelves”) – Currently a post-doc at Argonne National Laboratory
7. Jie Zhang (August 2010 – December 2013; “Numerical simulation of ozonation process”) - Currently at Corollo Engineers, Seattle, WA
8. Roozbeh Golshan (January 210 – December 2014; “Residual-based variational multiscale LES and wall modeling for Langmuir turbulence in coastal regions”) – Currently a post-doc at New Jersey Institute of Technology
9. Rachel Walker (August 2010 – April 2015; “Large-eddy simulation of the inner continental shelf under the combined effects of surface temperature fluxes, tidal currents and Langmuir circulation”) – Currently a post-doc at Moffitt Cancer Center
10. Amine Hafsi (August 2012 – December 2017; DNS and LES of scalar transfer across an air-water interface during Inception and growth of Langmuir Circulation



### **Master students supervised**

1. Javad Zeidi (May 2018 – present)
2. Rajat Patel (August 2017 – present)
3. Paras Patel (August 2016 – December 2017)
4. Resmi Venugopal (May 2008 – May 2009)
5. Dustin Capps (August 2009 – April 2011)
6. Carlos Carballo (August 2010 – May 2011)
7. Faissal Ouedraogo (August 2013 – August 2015)
8. Cyril Ozouf (Visiting Scholar, Summer 2016)

### **Undergraduate students supervised**

1. Anthony Perez (May 2017 – present)
2. Carlos Carballo (January 2009 – August 2010)
3. Resmi Venugopal (Spring 2008)
4. Dominic Brocco (Summer 2010)
5. Ricardo Fernandez (September 2010 – May 2011)
6. Timothy Ivancic (May 2009 – August 2009)
7. Alexis Mills (Summer 2011)
8. Faissal Ouedraogo (Summer 2013)
9. Jakobi Peets (Summer 2015)
10. Gregory Miller (February 2016 – May 2016)

### **Courses taught by semester and student ratings**

#### ***Undergraduate:***

1. Basic Fluid Mechanics, Spring 07, 4.32/5.00 (19 of 31 students responded)
2. Basic Fluid Mechanics, Fall 07, 4.76/5.00 (42 of 63 students responded)
3. Basic Fluid Mechanics, Spring 08, 4.49/5.00 (42 of 74 students responded)
4. Basic Fluid Mechanics, Fall 08, 4.46/5.00 (41 of 60 students responded)
5. Basic Fluid Mechanics, Spring 09, 4.64/5.00 (45 of 66 students responded)
6. Basic Fluid Mechanics, Fall 09, 4.68/5.00 (63 of 72 students responded)
7. Basic Fluid Mechanics, Spring 10, 4.85/5.00 (40 of 49 students responded)
8. Basic Fluid Mechanics, Spring 11, 4.81/5.00 (53 of 63 students responded)
9. Basic Fluid Mechanics, Fall 11, 4.60/5.00 (29 of 59 students responded)
10. Basic Fluid Mechanics, Spring 12, 4.74/5.00 (47 of 57 students responded)
11. Basic Fluid Mechanics, Fall 12, 4.47/5.00 (43 of 63 students responded)
12. Basic Fluid Mechanics, Spring 13, 4.44/5.00 (32 of 58 students responded)
13. Basic Fluid Mechanics, Fall 13, 4.55/5.00 (22 of 57 students responded)
14. Basic Fluid Mechanics, Spring 14, 4.6/5.00 (20 out of 42 students responded)
15. Basic Fluid Mechanics, Fall 14, 4.30/5.00 (20 of 71 students responded)
16. Basic Fluid Mechanics, Fall 15, 4.14/5.00 (32 of 64 students responded)
17. Basic Fluid Mechanics, Fall 16, 4.62/5.00 (21 of 70 students responded)
18. Basic Fluid Mechanics, Fall 17, 4.3/5.0 (23 out of 73 students responded)
19. Numerical and Computing Tools I, Fall 09, 4.00/5.00 (53 of 63 students responded)
20. Numerical and Computing Tools I, Fall 10, 4.83/5.00 (41 of 45 students responded)

21. Numerical and Computing Tools I, Fall 13, 4.63/5.00 (30 of 47 students responded)
22. Introduction to Engineering Analysis, Fall 2000, Spring 2001 (taught at RPI)

**Graduate:**

23. Adv. Computational Fluid Mechanics, Fall 10, 4.86/5.00 (7 of 8 students responded)
24. Adv. Computational Fluid Mechanics, Spring 12, 5.0/5.0 (5 of 5 students responded)
25. Adv. Computational Fluid Mechanics, Fall 14, 4.0/5.0 (2 of 7 students responded)
26. Adv. Computational Fluid Mechanics, Fall 17, 4.45/5.0 (11 out of 25 students responded)
27. Environmental Fluid Mechanics, Spring 18, 4.25/5 (7 out of 9 students responded)
28. Applied Finite Elements, Spring 13, 4.71/5.00 (21 out of 34 students responded)
29. Applied Finite Elements, Spring 14, 4.60/5.00 (16 of 24 students responded)
30. Applied Finite Elements, Spring 15, 4.60/5.00 (14 of 19 students responded)
31. Applied Finite Elements, Spring 16, 4.42/5.00 (26 out of 41 students responded)
32. Applied Finite Elements, Spring 17, 4.43/5.00 (21 out of 30 students responded)
33. Advanced Numerical Methods for Engineers, Fall 15, 4.83 (6 of 7 students responded)
34. Advanced Numerical Methods for Engineers, Fall 16, 4.25 (4 out of 5 students responded)
35. Environmental Engineering and Water Resources Seminar, Spring 13, 4.67/5.00 (3 out of 5 students responded)
36. Environmental Engineering and Water Resources Seminar, Spring 16, 4.00/5.00 (4 out of 7 students responded)
37. Graduate Structures and Materials Seminar, Spring 17, 4.60/5.00 (5 out of 10 students responded)

**Service to University of South Florida**

1. Computations Committee, Chair (2015 – present)
2. Computations Committee, Member (2007 – 2015)
3. Engineering Mechanics Committee, Member (2007 – present)
4. Structures, Geotechnical and Materials Committee, Member (2011 – present)
5. Environmental and Water Resources Engineering Committee, Member (2011 – present)
6. Graduate Committee, Member (Fall 2012 - present)
7. Instructor Search Committee, Member (2010)
8. Department Advisory Board Search Committee, Member (2007 - 2009)
9. Search Committee for State of Florida 21st Century World Class Scholar, Member (2008)
10. Organizer of Environmental and Water Resources Seminar (Department Seminar) for Spring 2013, Spring 2016
11. Organizer of Graduate Structures and Materials Seminar, Spring 17
12. Faculty Mentor for Engineers Without Borders (2007 – 8/2011)
13. Faculty Advisor for Engineers Without Borders (8/2011 – present)
14. Faculty Advisor for Society of Hispanic Professional Engineers (8/2010 – present)
15. Faculty Advisor for Dominican-American Students Association (2012-2013)
16. Fundamentals of Engineering (FE) Exam review classes (Fall 2008 – present)
17. College of Engineering Research Day poster judge (Fall 2011, Fall 2012, Fall 2013, Fall 2014, Fall 2015)
18. Reviewer of preliminary NSF CAREER proposals by USF College of Engineering faculty (2 proposals reviewed in 2011; 2 proposal reviewed in 2018)

## 19. Faculty Mentor for USF Automotive Society (2007)

### Service to the community (outreach activities)

1. Taught 5 sessions of a 30-minute introduction to computational fluid dynamics to middle school and high school students at Engineering EXPO, University of South Florida, February, 2015.
2. Engineers Without Borders (EWB) – USF Faculty Advisor (8/2011 - present), Mentor (2007-8/2011)
  - Mentored EWB-USF members on implementation of their Water for Miramar project aimed at establishing a rainwater catchment system for an under-developed community in the Dominican Republic.
  - Traveled with EWB-USF members to Miramar, Dominican Republic on four occasions (April 2009, May 2012, May 2014, December 2015) to discuss/plan/implement the project with Miramar community members.
  - Liaison between the Miramar community members and EWB-USF members throughout the academic years.
  - Mentored EWB-USF members in designing/installing a rainwater catchment system for the USF Botanical Garden in preparation for the installation of a similar system in Miramar.
  - Mentored EWB-USF in planning for new project bringing sanitary latrines to a small town in Bolivia (2018).
3. *Great American Teach-In* at Shaw Elementary School in Tampa, FL (November 15, 2012)
4. *Climate Change Symposium and Showcase* at Blake High School in Tampa, FL (November 7, 2011): Presented research on the impact of upper ocean turbulent mixing on physical, chemical and biological processes to Florida secondary school teachers and educators.
5. As part of recent NSF grants funding work on upper ocean turbulence, I am currently developing an informational webpage on the impact of upper-ocean turbulent mixing on physical, chemical and biological processes. This webpage will be aimed at high school and elementary school students and the public in general. Contents of the webpage will be/have been disseminated at events such as the *Great American Teach-In* and the *Climate Change Symposium and Showcase*. In addition to REU and graduate students, information for the webpage will also be obtained through a citizen science network of recreational boaters who report surface manifestations of the previously mentioned processes (via photographs) concurrent with wind and wave state conditions.

### Service to the profession

1. Organizer and session chair for symposium on turbulence-resolving methodologies at the 13<sup>th</sup> *World Congress on Computational Mechanics*, New York, NY, 2018.
2. Guest Co-Editor of *Journal of Environmental Engineering* Special Issue titled “Emerging CFD Applications in Water Treatment”, 2018-2019.
3. Elected member of the ASCE Engineering Mechanics Institute Fluid Dynamics Committee, 2018.

4. Session chair at the 67<sup>th</sup> Annual Meeting of the American Physical Society / Division of Fluid Dynamics, Denver, CO, 2017
5. Organizer and session chair for symposium on DNS and LES methods and applications at the 2017 Engineering Mechanics Institute Conference, San Diego, CA, 2017
6. Session chair at the 66<sup>th</sup> Annual Meeting of the American Physical Society / Division of Fluid Dynamics, Portland, OR, 2016.
7. Guest Editor of *Computers and Fluids* Special Issue titled "LES and DNS of Oceanic and Atmospheric Flows, 2016-2107.
8. Founding member of ASCE CFD Task Committee on applications of CFD to water and wastewater treatment, 2015-present.
9. Regular manuscript reviewer for the following journals: *Computers and Fluids*, *Journal of Physical Oceanography*, *Journal of Geophysical Research – Oceans*, *Ocean Modeling*, *Chinese Journal of Oceanology and Limnology*, *Physics of Fluids*, *Computer Methods in Applied Mechanics and Engineering*, *Theoretical and Computational Fluid Dynamics*, *Journal of Computational Physics*, *ASME Journal of Fluids Engineering*, *Journal of Hydraulic Engineering*, *Journal of Environmental Engineering*
10. Mail-in proposal reviewer for *National Science Foundation*
11. *National Science Foundation* Panelist (November 2010; April 2013; June 2013; April 2014; November 2014; March 2015; October 2015; June 2018)
12. Organizer and session chair for two turbulence symposia (26 talks) at the US 13<sup>th</sup> National Congress on Computational Mechanics, 2015.
13. Co-organizer and Session Chair of a turbulence symposium held at *Advances in Computational Mechanics*, 2013.
14. Session chair at the 65<sup>th</sup> American Physical Society / Division of Fluid Dynamics, Annual Meeting, 2012.
15. Session organizer at the 9<sup>th</sup> World Congress in Computational Mechanics, 2010
16. Session chair at the 10<sup>th</sup> U.S. National Congress on Computational Mechanics, 2009.

**Professional organizations:** American Physical Society / Division of Fluid Dynamics, American Geophysical Union, United States Association for Computational Mechanics, ASCE Engineering Mechanics Institute, ASCE Environmental and Water Resources Institute