Workshop on

Microscale Modeling of Complex-Terrain Flows

September 25-26, 2014

112-114 McKenna Hall, University of Notre Dame

Sponsors:
Army Research Office (Environmental Science Division)
Wayne and Diana Murdy Endowment Fund, University of Notre Dame

Draft Agenda

Aims:

(i) Identify critical scientific issues that stymie prediction of microscale flows in complex terrain, especially focusing on wind energy resources, urban and defense applications;

(ii) Review novel research tools that may help improve microscale predictions in complex terrain in leaps;

(iii) Discuss opportunities to closely collaborate with the European ERANET+: New European Wind Atlas (NEWA) project;

(iv) Map out research topics and instrumentation deployments that would augment ERANET+ project field studies to be conducted in Perdigão, Portugal in 2016-2017;

(v) Develop a science plan for field deployments in Perdigão so that the US Investigators can seek research support from national agencies, especially via NSF SPO/EDO process, to collaborate with European counterparts;

(vi) Assess possible participation of US governmental agencies;

(vii) Seek input for future large urban microscale modeling and observations projects.

September 25, Thursday	
07.30 am — 08.00 am	*Registration*
Overview Presentations 1 — Chair: Julie Lundquist	
08.00 am — 08.30 am	**Joe Fernando, University of Notre Dame** Welcome & Background
08.30 am — 09.00 am	**Jakob Mann, Technical University Denmark** ERA-NET NEWA: Goals, status, expectations
09.00 am — 09.30 am	**Jose Palma, University of Porto** Status of the Perdigão field experimental planning, how US participants can help
09.30 am — 10.00 am	**Steve Oncley, NCAR** NCAR facilities status
10.00am — 10.30am	*Coffee Break*
Overview Presentations 2 — Chair: Steve Oncley	
10.30 am — 11.00 am	**Robert Banta, NOAA** NOAA perspectives and Resources
11.00 am — 11.30 am	**Vanda Grubišić, EOL/NCAR** NCAR perspectives and resources
11.30 am — 12.00 pm	**David Knapp & Robb Randall, Army Research Laboratory** Mesoscale and Microscale Atmospheric Modeling and Sensing at the Army Research Laboratory
12.00 pm — 12.40 pm	*Working Lunch* Discussion among participants
12.40 pm — 01.30 pm	*Lab Visit (20 mins) and Free Time*
Presentation of individual science goals — Chair: Laura Leo	
01.30 pm — 01.50 pm	**Rebecca Barthelmie, Cornell University** Potential measurement strategy with lidar and sonics: Opportunity and issues
01.50 pm — 02.10 pm	**Luciano Castillo, Texas Tech University** Laboratory Approaches to Wnd Energy Modeling
02.10 pm — 02.30 pm	**Tina Chow, University of California, Berkeley** Improved turbulence closure models and the immersed boundary method for LES of flow over complex terrain
02.30 pm — 02.50 pm	**Inanc Senocak, Boise State University** Microscale modeling of winds over complex terrain using an immersed boundary method on GPU clusters
02.50 pm — 03.10 pm	**Eric Pardyjak, University of Utah** Uncertainty in evening transition and turbulent flux characterization in mountainous terrain
03.10 pm — 03.30 pm	**Marko Princevac, University of California, Riverside** Nocturnal boundary layer growth

03.30 pm — 03.50 pm	**Ben MacCall, Army Research Laboratory** Microscale Modeling Initiatives at the US Army Research Laboratory
03.50 pm— 04.10 pm	*Coffee Break*
04.10 pm— 06.20 pm	*Breakout discussion among participants and compilation of scientific issues* **Experimental Group** - Room 106 McKenna Hall - Julie Lundquist (lead), Eric Pardyjak (scribe) **Numerical Modelling Group** - Room 112-114 McKenna Hall - Tina Chow (lead), Ben MacCall (scribe)
06.30 pm	*Dinner at Morris Inn - Sorin's Hesburgh dining room*

September 26, Friday	
08.00 am — 08,30 am	Report of the breakout discussion **Julie Lundquist, University of Colorado** **Tina Chow, University of California, Berkeley**
08,30 am — 10,00 am	Discussion Session – 1: Developing a Science Plan Discussion Leaders: **Joe Fernando (Notre Dame) and Jose Palma (Porto)** Scribe: **Laura Leo, University of Notre Dame**
10.00am — 10.30am	*Coffee Break*
10,30 am — 12,00 am	Discussion Session 2 : Developing an Experiment Plan Discussion Leader: **Steve Oncley (NCAR) and Jakob Mann (DTU)** Scribe: **Joe Fernando, University of Notre Dame**
12.00am — 12.45 pm	*Working Lunch* Discussion among participants
1.00 pm – 2.30pm	Discussion Session 3 : Creating a strategy for science proposals Discussion Leader: **Julie Lundquist, University of Colorado** Scribe: **Joe Fernando, University of Notre Dame**
2.30 pm	End of the Workshop