

**Submittee:** Bruce Sutherland  
**Date Submitted:** 2012-08-20 09:53  
**Title:** Fluid Dynamics Summer School  
**Event Type:** Summer-School

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**Location:**  
University of Alberta

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**Dates:**  
July 22 - July 28, 2012

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**Topic:**  
Fluid Dynamics

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**Methodology:**  
Fifteen 80 minute lectures given by 6 professors (three each morning and early afternoon over 5 days); Students alternating between Experimental and Computational labs working in teams of three for 2 1/2 hours between Monday and Thursday; Students gave presentations on a preselected lab during the last afternoon.

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**Objectives Achieved:**  
Students were exposed to a broad range of phenomenology in fluid dynamics including geophysical and environmental fluid dynamics, viscous flows, turbulent flows, non-Newtonian fluids and plasmas. Even for those familiar with some of the theory, they were able to draw a connection between the mathematics and phenomenology through the experimental and computational labs. At the conclusion, all of the undergraduates attending stated a desire to pursue graduate studies in fluid dynamics.

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**Scientific Highlights:**  
The primary objective was to expose undergraduates and starting graduates to fluid dynamics research and to encourage them to pursue this research area as a career. Based upon verbal feedback at the end of the school, this objective was achieved. In particular, the undergraduates who just finished 3rd year intend to apply to UBC and/or U. Alberta in the next year.

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**Organizers:**  
Sutherland, Bruce, Physics and Earth & Atmospheric Sciences, U. Alberta (Primary)// Balmforth, Neil, Mathematics and Earth & Ocean Sciences, UBC// Flynn, Morris, Mechanical Engineering, U. Alberta// Frigaard, Ian, Mathematics and Mechanical Engineering, UBC// Homsy, Bud, Mathematics, UBC// Sydora, Richard, Physics, U Alberta//

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**Speakers:**

Neil Balmforth, Mathematics, UBC, Geophysical Fluids (complex fluids, volcanoes, ice flows, avalanches)// Morris Flynn, Mech Eng, U Alberta, Environmental Fluids (plumes, gravity currents, natural ventilation)// Ian Frigaard, Mathematics, UBC, Confined Fluids (pipe flows, turbulence, non-Newtonian fluids)// Bud Homsey, Mathematics, UBC, Fundamentals and Microhydrodynamics (equations, scaling, viscosity, surface tension)// Bruce Sutherland, Physics, U. Alberta, Atmospheric & Oceanic Fluids (stratification, rotation)// Richard Sydora, Physics, U. Alberta, Plasmas (magnetohydrodynamics, astrophysical plasmas)// NOTE: These talks were given in the style of interactive classroom lectures. Abstracts were not required.

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**Links:**

fdss.physics.ualberta.ca

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**Comments / Miscellaneous:**

Thank you to PIMS for their support. Photographs taken during the event can viewed at fdss.physics.ualberta. Schedule is attached to this report.

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**File Uploads:**

Additional Upload 1: [http://www.pims.math.ca/files/final\\_report/schedule.pdf](http://www.pims.math.ca/files/final_report/schedule.pdf)

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