2013 Alliance Research Internship Program  
(3 months)  
between Columbia University and Ecole Polytechnique

Created in 2002, the Alliance Program is a transatlantic joint-venture between Columbia University, the Ecole Polytechnique, Sciences Po and the Université Paris I Panthéon-Sorbonne. Since 2008, the Alliance Research Internship Program allows students from the Ecole Polytechnique to complete a three-month internship project in a research center at Columbia University.

**Internship Description**
- Research projects are available the NASA Goddard Institute for Space Studies (GISS) and the Center for the International Earth Science Information Network (CIESIN).
- Students work with a faculty member, who acts as an academic advisor and supervises their research project.
- Internships take place from April to June 2013 (3 months)
- Internships are not paid. Students are responsible for finding housing.

**Applications**
- To apply, students will send their application to the Alliance Program to lb2808@columbia.edu
- Applications must include: a CV, a cover letter (1 page), and a letter of recommendation. For confidentiality matters, sponsors should send letters of recommendation directly to Lauranne Bardin, Assistant Director of the Alliance Program (lb2808@columbia.edu).
- All materials must be submitted in English.

**Deadline:** January 20th, 2013

**Contact**
Lauranne BARDIN, Alliance Program Assistant Director  
Email: lb2808@columbia.edu

**For more information**
1. Mixing in the ocean

**Faculty Sponsor:** Prof. Vittorio Canuto

**Description:** One of the key physical processes that take heat, CO2, nutrients etc. from the surface to the ocean interior, is turbulent mixing which occurs at scales not resolvable with present OGCM and thus a parameterization or model is required.

There is large variety of physical mechanisms that contribute to mixing, from shear in the upper layer, internal gravity waves in the interior, double diffusion and tidal interaction with bottom rough topography, each of which must be modeled.

Over many years we have developed a series of turbulence models based on the latest advances in such field and applied them to the problem at hand. At present and in the immediate future, the goal is to test those mixing models so as to assess their implications on the ocean global properties and ultimately their impact on climate scenarios.

CIESIN

1) Research on Climate Change & Resettlement

**Faculty Sponsor:** Alex de Sherbinin

**Description:** As climate change impacts become more severe, and governments develop land-intensive mitigation and adaptation responses, there is little doubt that there will be an increase in the amount of government-led resettlement in this century. Resettlement has both positive and negative aspects. On the positive side, it can represent an important protection for vulnerable communities that would otherwise be left to their own devices as a result of climate-related disasters or land acquisitions for major mitigation and adaptation projects. On the negative side, the track record of resettlement associated with large infrastructure and development projects has been decidedly mixed. The opportunity and the challenge of resettlement implies a need for research to guide policies. The intern will be located CIESIN, and depending on skill sets, will either work on desk research focusing on transferable lessons from existing research on development and disaster induced displacement and resettlement to the special case of climate-related resettlement, or on a preliminary GIS analysis of areas that may be prone to significant climate impacts in the future and therefore may either experience forced migration or require organized resettlement.