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 at the Urban Design Lab (UDL) of the Earth Institute at Columbia University and the NASA Goddard Institute for Space Studies (GISS).
- 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:** December 30, 2012

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

**For more information**
1. Documenting the Bronx Bodegas

Faculty Sponsor: Maria-Paola Sutto

Description: Since 2005 the New York City Department Of Health and Mental Hygiene (DOHMH) has pursued the “Healthy Bodega Initiative” to increase the quality of produce on the shelves of this crucial component of the New York City food infrastructure. This initiative, coordinated with the New York City Center for Economic Opportunity (NYC-CEO), has entailed several components including business practice consultancies with bodega owners, and stakeholder community groups within target neighborhoods.

The DOHMH is requesting that the Urban Design Lab complement their existing work, including a granular analysis of the bodega spatial organization in direct partnership with bodega owners for an evaluation of the present marketing and food display strategies.

The categorization of spatial typologies will lead to a set of proposed alternatives. This work will build upon and integrate the ongoing activities of the NYC Department of Health and the Center for Economic Development.

The intern will assist with the research, and the publishing of the final report. Good observational and analytical capacity and knowledge of the Spanish language are required. Knowledge of publishing software (like Rhino or Illustrator) is a plus.

2. Post Sandy Resiliency in New Jersey Communities

Faculty Sponsor: Maria-Paola Sutto

Description: The Urban Design Lab, in coordination with the National Center for Risk Preparedness will assemble an inventory of the impacts and recovery efficiency on a series of New Jersey Towns affected from Hurricane Sandy, with the intent to share the knowledge about what worked and suggest the best practices to be adopted in a future event. The possibility of flooding, extreme precipitations, and intense winds will be taken into consideration.

The intern will be helping with the literature review, follow-up interviews, quantification, spatial analysis, and every aspect of a research that will inform an aspect of contemporary life with a first hand knowledge of an extreme natural event.

3. Urban Agriculture Performance and Strategies

Faculty Sponsor: Maria-Paola Sutto

Description: The UDL Urban Agriculture Project in its second phase, and is looking at documenting the environmental performance of different types of existing New York City agriculture operations.
The intern will be involved in multiple components of this research project, helping with performance analysis and in the developing of guidelines for best practices for productive green roofs.

**Specific tasks include:** Assisting with research on stormwater mitigation techniques and other ecosystem services; gathering data on specific New York Cities communities and land use; mapping and spatial analysis. The position may also require assisting with collecting data from on-site monitoring stations on rooftop farms.

**Skills required:** This position requires proficiency with ArcGIS, as mapping and spatial analysis is a key component of the project. Familiarity with the Adobe Creative Suite is a plus. Good research skills are also required, including existing databases, and ability to contact relevant municipal agencies and other private and public organizations.
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.