Institut Estudis Espacials Catalunya
Consejo Superior Investigaciones Científicas
(Catalonian Institut for Space Studies/Higher Council for Scientific Research)

PhD PROJECT

RESEARCH IN ATMOSPHERIC PHYSICS AND SPACE GEODESY

EARTH SCIENCE AND TECHNOLOGY DEPARTMENT

**Project Title**: Characterization of atmospheric turbulence using Global Navigation Satellite Systems

**Description**: Random fluctuations in the atmosphere refractive index affect the propagation of electromagnetic (EM) waves. The refractive-index structure parameter, a measure of the strength of atmospheric fluctuations, provides the link between EM waves propagated in the atmosphere and turbulence statistics. Improved knowledge of the spatio-temporal variations of this structure parameter is needed for a variety of atmospheric studies such as evolution of the depth of the convective boundary layer, cloud formation and dissipation and coupled climate systems. Unfortunately, high-resolution determinations of this parameter have been elusive. Signals from Global Navigation Satellite Systems (GNSS) such as the U.S. Global Positioning System (GPS) or the upcoming European system, Galileo, offer the opportunity of ameliorating this problem. The goal of this project is to combine GNSS, Large-Eddy Simulation (LES) models, and meteorological observations to study the feasibility of accurate, continuous, near real-time, all-weather, inexpensive, GNSS-based, passive remote sensing of atmospheric turbulence over large areas and varied meteorological conditions.

**Keywords**: Atmospheric Physics, Turbulence, Global Positioning System, Galileo, Earth Observations, Large-Eddy Simulations

## APPLICATIONS

We are looking for a well qualified applicant, holding a bachelor (or expecting the imminent award of one) in Physics or related field, with an enthusiasm for research, to pursue a PhD degree in our multi-disciplinary research group.

Applications should include (1) academic experience, (2) work experience, (3) a list of references, and (4) a two-page research proposal (related to the subject of this project), which should be sent to the attention of M. Español at the IEEC/CSIC address below.

For further information, see http://www.ieec.fcr.es . Informal enquiries about this position may be addressed to: Drs. David Pino, email pino@ieec.fcr.es, telephone +34–93–280–2088, and/or Pedro Elosegui, email pelosegui@ieec.fcr.es or telephone +34–93–205–8527.