

## Training Opportunity for Irish Trainees

Reference	Title	Duty Station
IE-2019-EOP-SDE	EO for Marine and Coastal Environment Monitoring	ESRIN
<p><b>Overview of the unit's mission:</b>            The Data Applications Division in the Department of Science, Applications and Climate based at ESA/ESRIN in Frascati, Italy, is in charge of engaging scientific, public and commercial sector user communities, identifying their needs, implementing EO data exploitation projects, tools and platforms to address these needs, and progressively transferring validated results and applications from research to operations. The Division builds up new scientific and end-user communities and works with them in targeted R&amp;D and demonstration activities, that range from science up to pre-commercial applications development, to advance Earth system knowledge, maximise ESA missions impact in society and underpin the definition of future EO systems. The Division is responsible for coordinating ESA's EO training and education activities.</p> <p>Interested candidates are encouraged to visit the ESA website: <a href="http://www.esa.int/ESA">www.esa.int/ESA</a> as well as <a href="http://eo4society.esa.int">eo4society.esa.int</a></p>		
<p><b>Overview of the field of activity proposed:</b>            The following fields of activity are proposed (Candidates should select maximum one or two from the list):</p> <ul style="list-style-type: none"> <li>• Development of new methods for water quality parameter retrieval including fusion of Sentinel 3 and Sentinel 2 class observations, machine learning based retrieval methods and customized methods for specific regions with optically complex waters. Additional analyses such as EO based characterization of jelly-fish blooms etc will also be considered</li> <li>• Development and demonstration of methods to apply satellite EO data for coastal mapping and coastal change characterization including development of methodologies for bathymetry retrieval and change mapping, coastline mapping and coastal erosion/deposition characterization, coastal sediment dynamics and coastal flood risk assessment</li> <li>• Development and demonstration of methods to apply satellite EO data for coastal ecosystem and habitat characterization including benthic habitat extent mapping and status assessment, coastal habitat extent and status assessment, development of methodologies for coastal ecosystem status characterization and integration of satellite based Hyper-spectral data with conventional datasets</li> <li>• Coastal ocean process characterization using satellite EO data, in-situ data and available local models. This can include coastal current nowcasting and forecasting, characterization of frontal structure dynamics, coastal wind and wave characterization</li> <li>• Development of customized prototype EO applications for blue economy developments including support to maritime spatial planning, aquaculture site selection and impact assessment methodology development, development of methodologies for monitoring sustainable tourism, resource assessment methodologies for next generation wind, wave and current energy systems and EO based monitoring coastal resource extraction activities including dredging and water desalination</li> <li>• Development and testing of satellite EO based methodologies for background pattern of life characterization for coastal areas with respect to vessel movements</li> <li>• Development and testing of satellite EO based methods for connecting land use change in river catchments with coastal water quality in estuaries, deltas and neighbouring near coast water bodies</li> <li>• Development and testing of novel EO based algorithms to detect and monitor discharges and pollution in the marine and coastal environment and characterization of discharge fluxes into the coastal environment (including marine plastics)</li> <li>• Characterization of Atlantic oceanographic processing using EO datasets. This may include AI/ML based approaches for characterization of fluxes, teleconnections etc or ocean process characterization (eg internal wave driven processes) or parameter retrieval (eg salinity, pH, temperature etc)</li> <li>• Application of AI/ML based approaches to use satellite EO to characterize dynamics and exchange processes in coastal ocean areas</li> </ul> <p>In addition, the candidate will be expected to participate to progress meetings for development contracts linked to marine and coastal activities as well as relevant Earth Observation workshops in ESRIN. To the extent possible it is also the intention that the candidate supports the elaboration of activities linked to ESA Regional Initiatives and Resilience</p>		
<p><b>Required education:</b>            MSc in Marine Engineering, Coastal Engineering, Environmental Engineering, Oceanography, Geophysics, Earth Science, Remote Sensing, Physical Geography, Hydrology or Applied Computer Science</p>		