

## ***Using nuclear techniques to support coastal zone management in the Caribbean region***

### ***The challenge...***

The marine environment is a key natural resource for the Caribbean region, with around 60% of gross national product dependent on the exploitation of marine resources. Tourism, fisheries, aquaculture and transport are also highly important to Caribbean countries. Concern over the growth of pollution in the Caribbean is rising: this has the potential to affect livelihoods and is already affecting the quality of marine products and services. Nuclear techniques can be used to support integrated coastal zone management, helping to reduce the degradation of the coastal ecosystems of the wider Caribbean region.

### ***The project...***

A regional technical cooperation project improved the assessment of relevant ecosystems, focusing on improving capacity building, establishing and extending regional scientific capabilities, and providing expertise to measure and analyse pollution levels for integrated coastal management programmes. Working with the United Nations Environment Programme, the Global Environment Facility, the Governments of Spain (through CIEMAT) and France, the IAEA trained over 100 people from 12 countries on various aspects of coastal zone management, including alpha and gamma spectrometry, geochronology, heavy metals and organics analysis, data interpretation and data quality. Equipment was provided to establish or upgrade laboratories.

### ***The impact...***

Through the project, the history of contamination over 100 years at 11 coastal zones has been reconstructed and the current contamination status established. The records have enormous scientific and social relevance, offering for the first time, a decadal retrospective vision of the Caribbean coastal zones. Coastal zone management actions have been designed and prioritized and the efficiency of environmental policies and programmes assessed. At the regional level, a regional Caribbean sediment database, CARISED, has been set up to store data for future generations. The participating countries are using the project results to comply with international agreements such as the Cartagena and Stockholm Conventions. An IAEA guidebook for sampling and analysis of marine sediment cores from the region has also been published.

Impacts at the country level include:

- Jamaica has modified its environmental policy.
- In Colombia, INVEMAR has established a section dedicated to the use of nuclear technologies.
- Guatemala is using the project results as baseline data for the control of products entering the country through the port.
- In Nicaragua, the Aquatic Resources Research Centre has established a regional capability for mercury analysis.
- Costa Rica has improved its national capability for nutrient analysis in marine sediments.
- Cuba and Colombia have produced new national guidelines on the quality of sediments.
- A monitoring programme is being set up in the Dominican Republic.
- A marine research laboratory is being established in Panama.



*Marine sampling in Colombia.*