

## **Participatory Geomatics Networks for Coastal Mapping and Monitoring : A community-based approach in the St. Lawrence, Québec, Canada**

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This article presents a participative geomatics project with the goal of increasing southern Québec's coastal communities' ability to map and monitor changes in their coastal environment. Capacity-building and empowerment using low-cost geomatics equipment, easy-to-use field protocols and semi-automated processing algorithms provide a resilience pathway for coastal communities facing the effects of climate change. This co-constructed project aims to develop a participatory network of individuals and groups capable of acquiring, processing and interpreting coastal geospatial data of the Estuary and Gulf of St Lawrence (eastern Canada).

The flexibility provided by recent advances in the field of applied geomatics, in particular in low-cost precise positioning devices and open-sourced photogrammetry algorithms, brings a huge potential to geospatial data acquisition by and for non-experts. When combined with participation and concertation approaches, geospatial data is a key factor in territorial appropriation by local groups and individuals. Data production is a key component for responding to climate changes in the coastal zone, and provides an adaptation pathway for communities to better communicate local challenges with decision-makers. Map-making processes allow mappers to spatialize their environments by producing georeferenced knowledge and by reflecting on the environment and its evolution. Technology transfer in applied geomatics to local communities is both a challenge and an innovation opportunity. There is a need for local actors to be able to produce high-quality geospatial products of their territories, which will also help to increase the number of high-resolution studies of the coastal zone.

Funded by the Québec Maritime Network (RQM), the project orientations are based on six fundamental flagship concepts, evenly distributed between technology (geomatics) and social sciences (participation) : 1) easy-to-use tools and protocols, 2) monitoring of precision to track changes, 3) adaptability to coastal geodiversity, 4) consultation and concertation, 5) technology transfer as a tool to empowerment, 6) open data sharing and dissemination.