ESONET is a collaboration between many academic, government, and industrial partners in fourteen countries: Belgium, Bulgaria, France, Germany, Greece, Ireland, Italy, The Netherlands, Norway, Portugal, Spain, Sweden, Turkey, and the UK. ESONET and its partners will:

- Create lasting integration of European research using deep-sea observatories capable of meeting societal needs for measuring across broad temporal & spatial scales;
- Demonstrate integration of researchers, institutes, & industrial partners;
- Define detailed objectives & design requirements and systematically address challenges of creating the needed system;
- Produce a practical plan for long-term monitoring of the deep-ocean environment as part of Global Earth Observation System of Systems (GEOSS) & Global Monitoring for Environment and Security (GMES).

ESONET will evolve Earth and ocean science through interdisciplinary priorities in:

- **Geoscience** - seismic, slope stability, & tsunami forecasting, fluid vent & seep dynamics, gas hydrate stability, plate tectonics, sedimentary & hydrothermal processes, & non-living resources;
- **Physical oceanography** - fluid flow, water mass character, heat transport, ice cover, climatology, & impacts from climate change & natural variability;
- **Biogeochemistry** - global carbon cycle & elemental cycling within the ocean, which occur through both physical, chemical, & biological processes;
- **Marine ecology** - abundance & distribution life, ecosystem function, productivity, biodiversity, genomics & molecular ecology, living resources, & climate feedbacks;
- **Transformative science** – study ocean processes across disciplines & scales to understand links between processes, services, & socioeconomic impacts (Table 1).

### Timeline
- **2007**
  - Start ESONET NoE from ESONET CA & ESONIM
- **2008**
  - Start EMSO preparatory phase
  - Demonstration missions started
  - Definition of science & basic design features
  - Interoperability standards investigated
- **2009**
  - Site-specific plans developing
  - Regional committees formed
  - Virtual institute planning begins
  - Site specific objectives & design requirements refined
- **2010**
  - Governance, financing, & legal aspects arranged
  - ESONET NoE demonstration mission end
  - Legal entities launched
- **2011**
  - Business, technical, & plans issued by EMSO
  - End ESONET NoE
  - Virtual institute (VISO) Begins
- **2012**
  - End EMSO preparatory phase
  - Engineering contracts arranged

### Science

**ESONET** will evolve Earth and ocean science through interdisciplinary priorities in:

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<th>Marine sciences</th>
<th>Geoscience</th>
<th>Physical oceanography</th>
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### Preparation & Integration

- ESONET is working with a sibling program, the European Multidisciplinary Seafloor Observatory (EMSO) preparatory phase programme, to create regional & core legal entities and financial frameworks to operate such a dispersed observing system.
- ESONET is defining its science and design requirements in conjunction with HERMIONE, EuroSITES, CoralFISH, NEAREST, NEAMTWS, DAMOCLES, ECORD, SIOS, GMES, & other programs to realize its goal of being a broad-impact program.
- ESONET is also achieving science & design progress through six demonstration missions:
  1. LOOME (Long-term Observations On Mud-volcano Eruptions) - geoscience, biogeochemistry, and marine ecology
  2. MARMARA DM - multidisciplinary observatory in the MARMARA Sea with geoscience focus
  3. LIDO (Listening to the Deep Ocean) - acoustic monitoring for geoscience & marine ecology
  4. MoMAR (Monitoring the Mid Atlantic Ridge) - autonomous observatory at active hydrothermal site
  5. AOEM (Arctic Ocean ESONET Mission) including MASOX (Monitoring Arctic Seafloor – Ocean Exchange) & ARCOONE (Arctic Operational Oceanography Network in ESONET) - including all major ESONET science areas
  6. MODOO (MOdular Deep Ocean Observatory) - a mobile, interdisciplinary observatory collaboration w/ EuroSITES