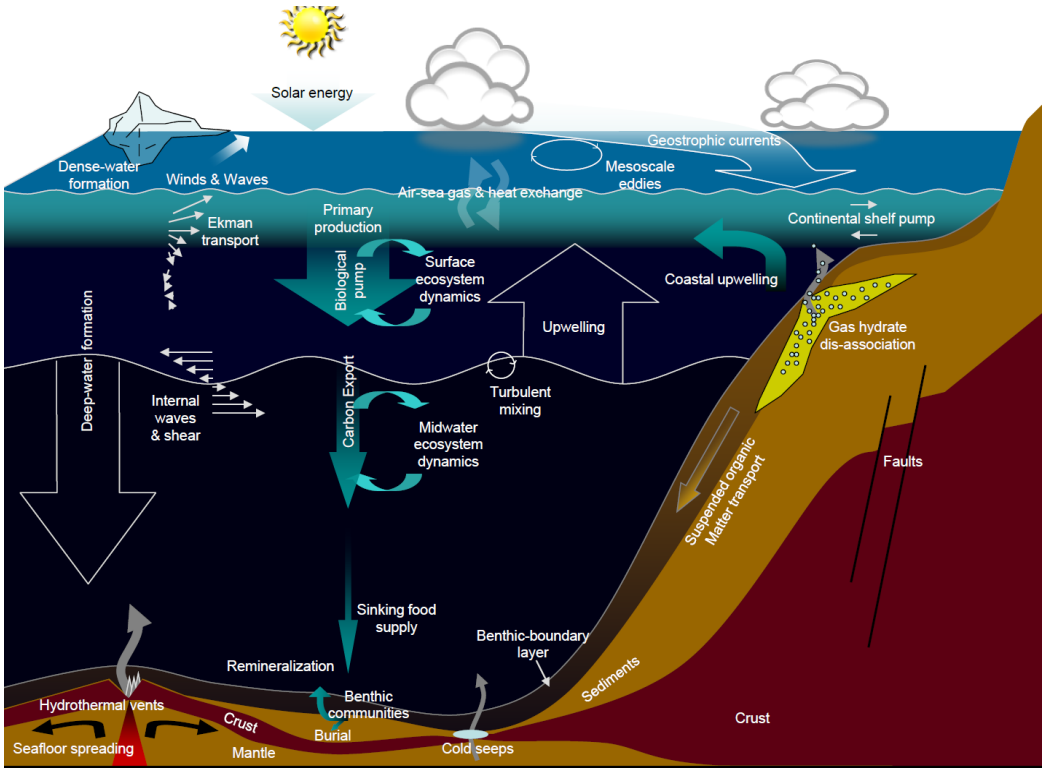
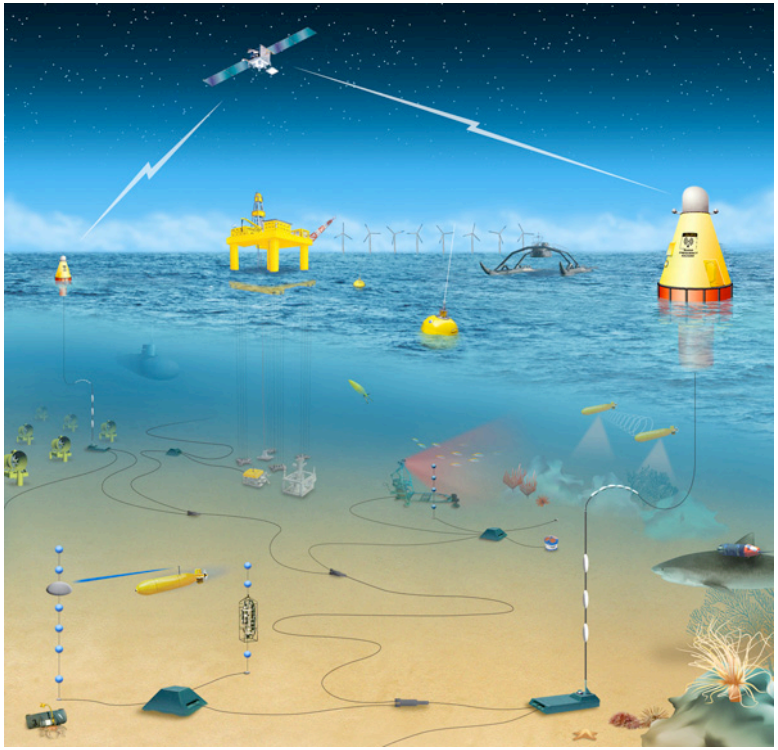


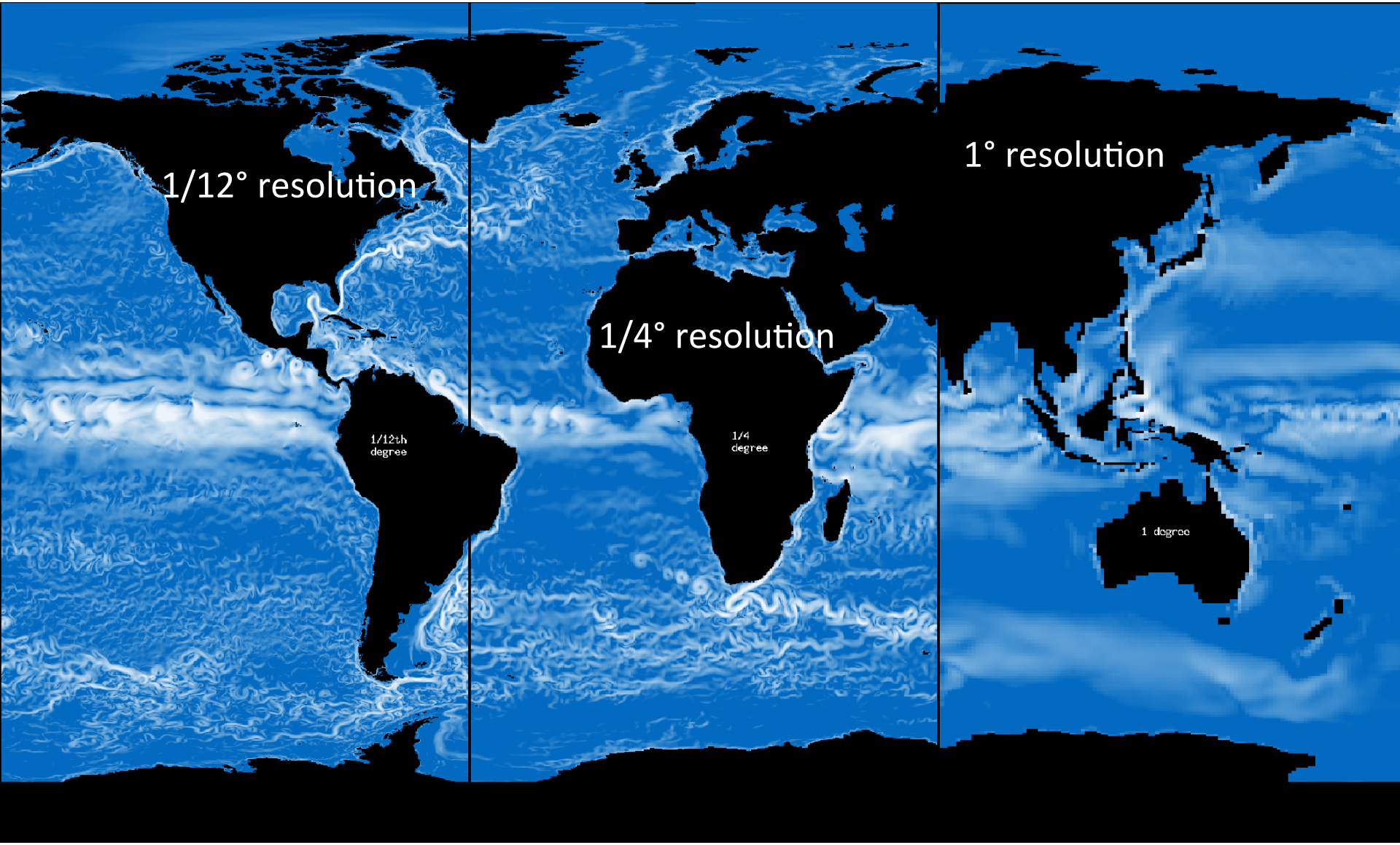


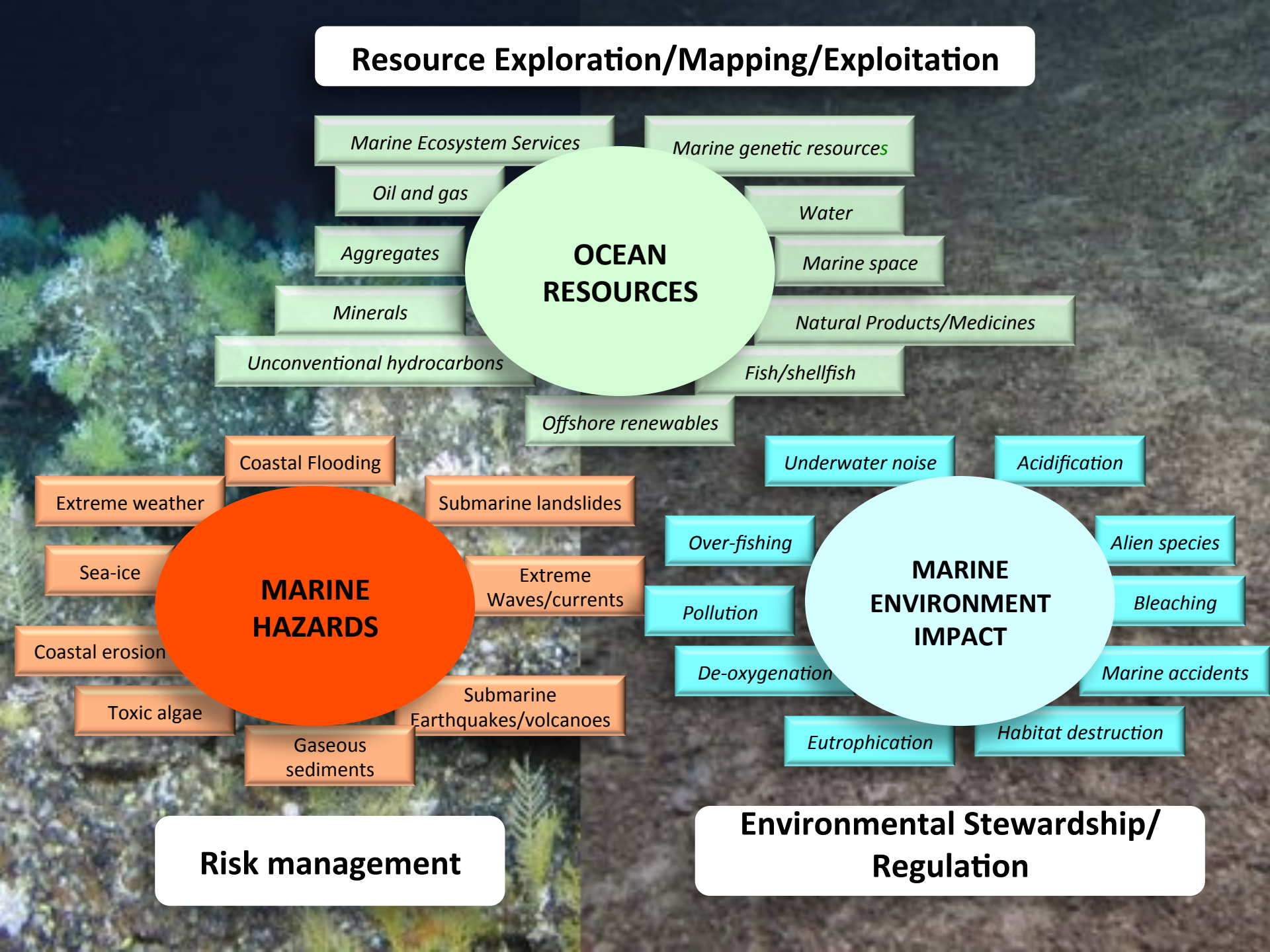
A decadal vision for marine observing infrastructures

Professor Ian Wright
Director, Science & Technology
National Oceanography Centre, UK

ICRI 2014, 2nd – 4th April, Athens

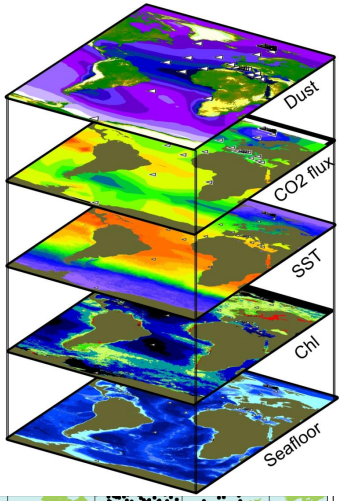
Ocean context: limited observing in space and time

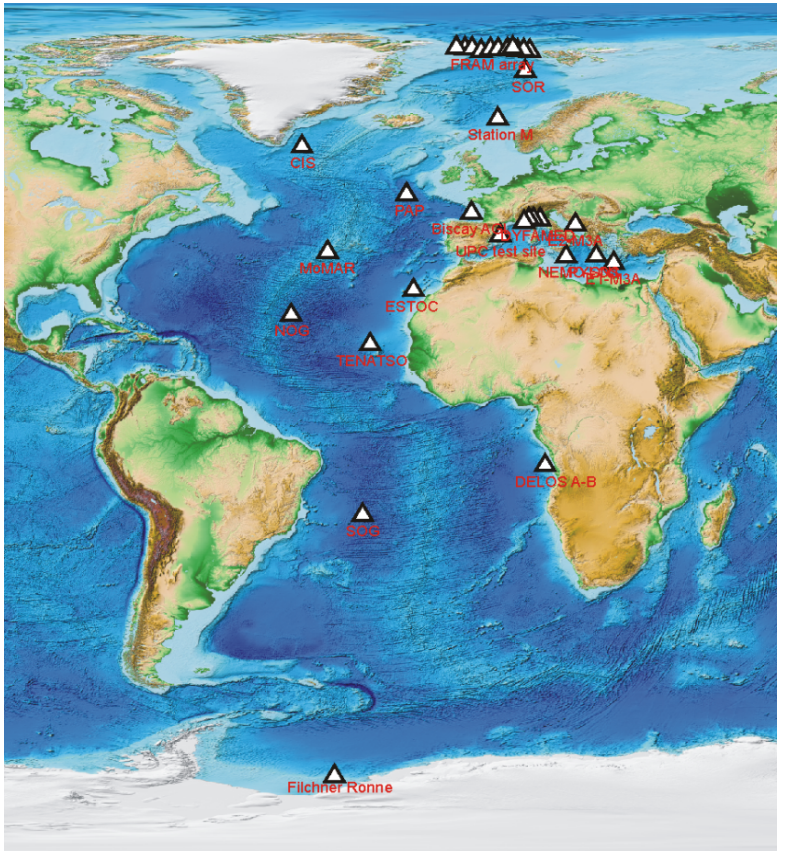


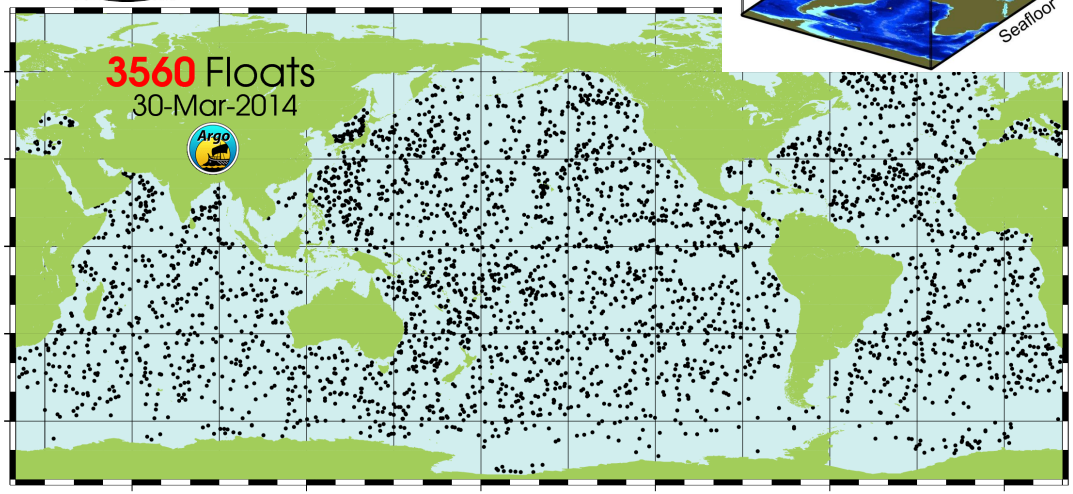

Resource Exploration/Mapping/Exploitation
Marine Ecosystem Services
Marine genetic resources
Oil and gas
Water
Aggregates
Marine space
OCEAN RESOURCES
Minerals
Natural Products/Medicines
Unconventional hydrocarbons
Fish/shellfish
Offshore renewables
Coastal Flooding
Underwater noise
Acidification
Extreme weather
Submarine landslides
Over-fishing
Alien species
Sea-ice
Extreme Waves/currents
MARINE HAZARDS
MARINE ENVIRONMENT IMPACT
Pollution
Bleaching
Coastal erosion
De-oxygenation
Marine accidents
Toxic algae
Submarine Earthquakes/volcanoes
Eutrophication
Habitat destruction
Gaseous sediments
Risk management
Environmental Stewardship/ Regulation

Current systems (fixed point and lagrangian observing) are making profound advances

FixO3
FIXED-POINT OPEN OCEAN OBSERVATORIES





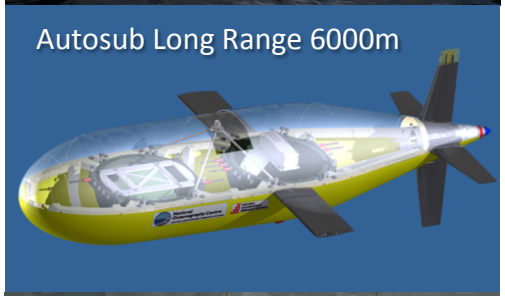


Automatic observing but not intelligent autonomy

Emerging observing intelligence

- More in situ and autonomous observations in space and time with real-time data transmission – opportunity to track events;
- Observations from crucial but challenging environments – e.g. under-ice (Arctic and Antarctica), Southern Ocean mid-winter, North Atlantic shelf break in winter;
- Integration of “fixed-point” and glider / AUV observing in deep-ocean, and shelf;
- Unmanned surface vehicles as “data gateways” for real-time data acquisition;
- Adaptive and dynamic adaptive ocean sensing.

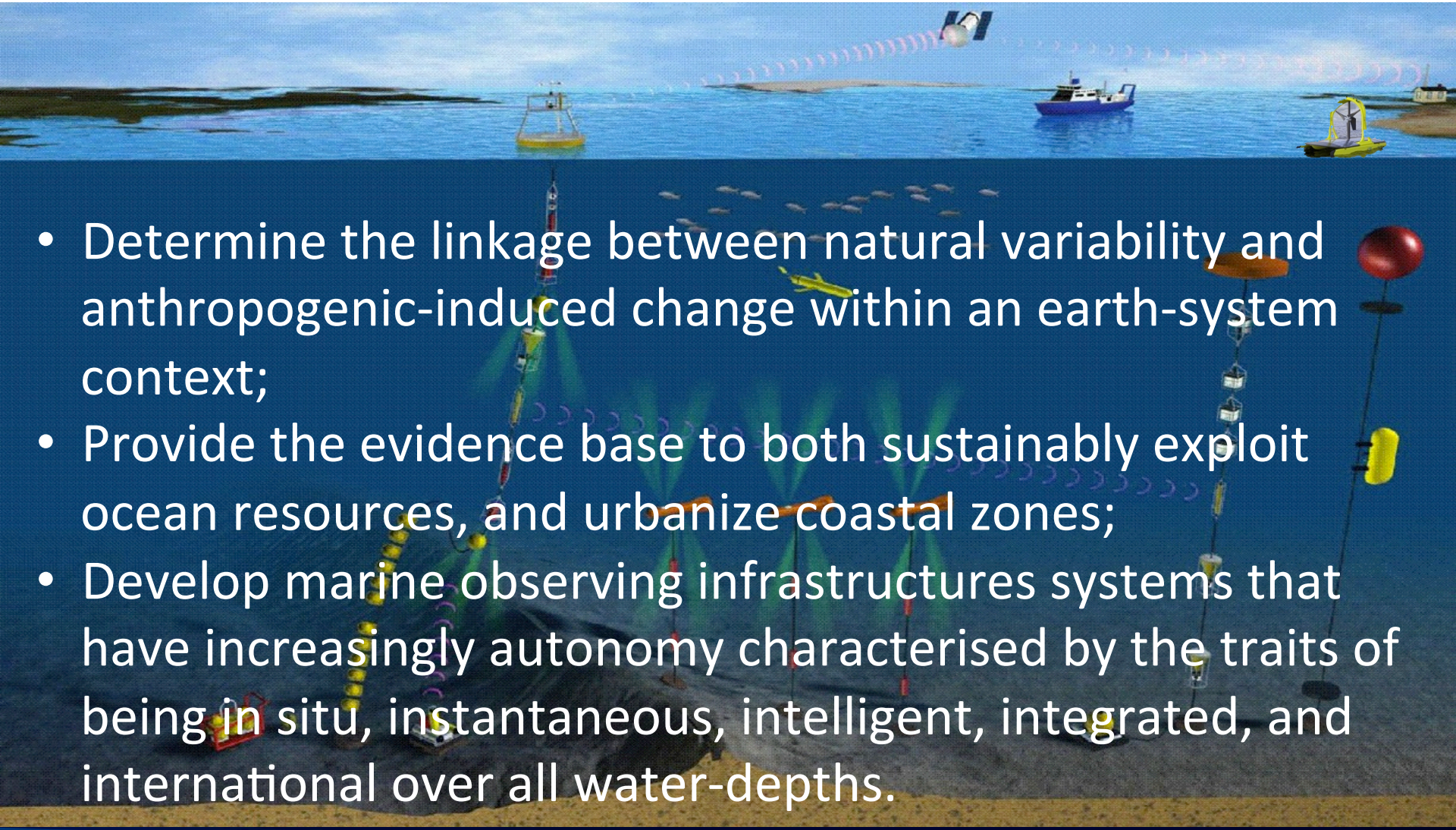








Decadal vision



- Determine the linkage between natural variability and anthropogenic-induced change within an earth-system context;
- Provide the evidence base to both sustainably exploit ocean resources, and urbanize coastal zones;
- Develop marine observing infrastructures systems that have increasingly autonomy characterised by the traits of being in situ, instantaneous, intelligent, integrated, and international over all water-depths.