WCRP
World Climate Research Programme

PRINCE ALBERT II
OF MONACO
FOUNDATION

WCRP-FPA2 Polar Challenge

The concept in a nutshell

www.wcrp-climate.org/polarchallenge

WMO IOC ICSU

The concept

A Prize money awarded to the first team completing a 2000 km continuous mission with an autonomous underwater vehicle (AUV) under the sea-ice

- Bonus demonstration 1 (optional):
  - regular observations of sea ice thickness or draft
- Bonus demonstration 2 (optional):
  - successful under-ice transmission of position and environmental data

The problem

The cryosphere:

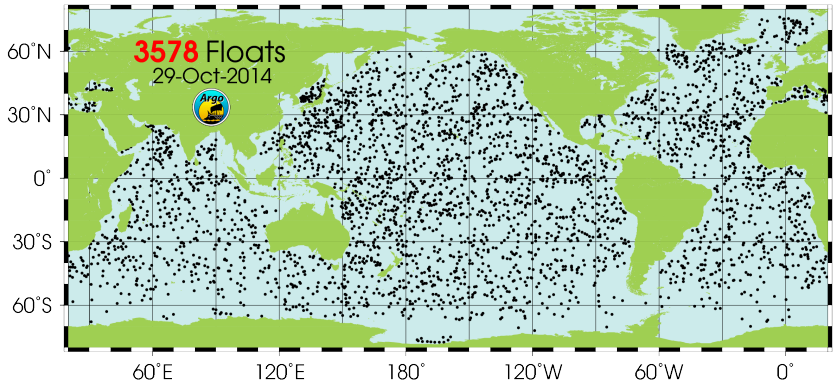
- plays a fundamental role in climate
- is directly impacted by climate change

Observations of the polar oceans:

- sparse
- risky
- expensive

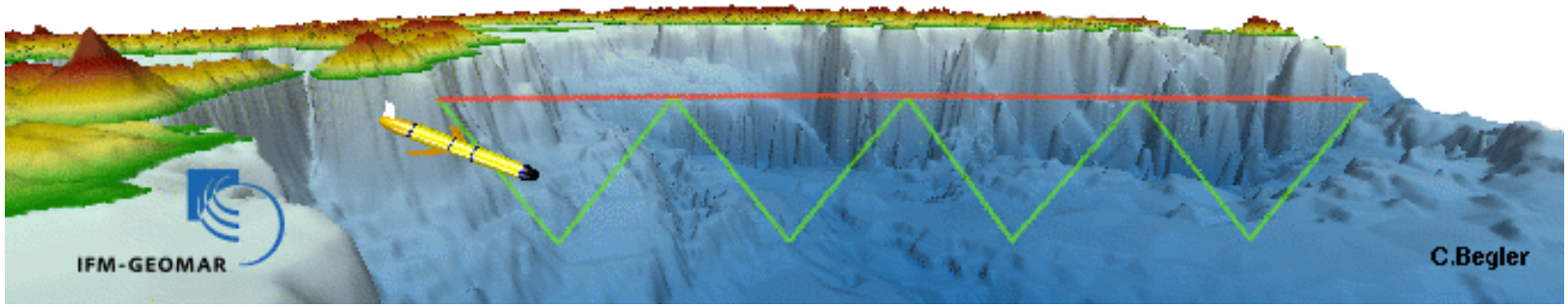
The vision and mission

- A new paradigm for long-term under-ice observations
- A cost-effective, autonomous and scalable ocean monitoring network for the Polar regions
- Analogy to ARGO but for sea-ice covered regions



AUV/Glider technology

Typical observations:
Temperature
Salinity
Currents
pH
Chlorophyll
etc



… at a fraction of the cost of conventional (ship-based) observing systems

The Challenge

- Ice-covered ocean regions:
  - AUV/glider range limitation
  - No GPS fix
  - No real-time data transmissions
- Innovations required:
  - Endurance
  - Positioning and navigation
  - Communications

The long-term benefits for the public and private sector

- Energy
- Environment
- Safety
- Transport/shipping
- Insurance
- Climate research and services
- Weather forecasts
- …

Would you like to help developing the Polar observing network of the future?

- would you like to compete for the Prize?
- would you like to become a co-sponsor of the Prize?

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PRINCE ALBERT II OF MONACO FOUNDATION

POLAR CHALLENGE

Be the first to complete a 2000 km continuous mission with an Autonomous Underwater Vehicle (AUV) under the sea ice.

Compete for the Prize!
Become a co-sponsor!
www.wcrp-climate.org/polarchallenge

JN 1691

Co-sponsors: WMO, Environment Canada, Environnement Canada, WWRP, esa, GCOS, GEO GROUP ON EARTH OBSERVATIONS, SCOR, Endorsed by: IASC, SCAR

POLAR CHALLENGE

CONTEXT

The cryosphere plays a fundamental role in the climate system. We need much better monitoring and prediction capabilities for the polar regions.

CHALLENGES AND OPPORTUNITIES

Polar observations are expensive, risky and sparse. We can expand AUVs' endurance, navigation and communication capabilities to operate under the sea ice.

VISION

A cost-effective, sustainable and autonomous polar ocean monitoring system to drive a new era for climate research and services.