Australian Government
Bureau of Meteorology

History and future perspectives

AN EXTERNAL VIEW

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Introduction

- Who am I?
- Some reflections on the basis of GODAE
- Some musing on the future

The beginning

The Global Ocean Data Assimilation Experiment

EJL

1) WHAT IS GODAE?

GODAE IS A PROJECT WHICH AIMS TO PROVIDE:

STATE OF THE OCEAN
- EVERY 10 DAYS
- AT 1/32° RESOLUTION
- GLOBALLY
- TO FULL DEPTH

ASSIMILATES
- SST
- SEA LEVEL
- T, S, PROPERTY PROFILES
- ACOUSTIC TOMOGRAPHY
- LAGRANGIAN VELOCITY

Jan 1998

: Michel Lefebvre

Purposeful

- To deliver practical routine (operational) ocean assimilation and prediction systems by 2008
- To facilitate associated practical applications, particularly for coastal areas
- To be advocates for the necessary global ocean observations which, by implication, needed to be practical and sustainable
- Infrastructure

Scientific and technical basis

- Scientific and technical roots in WOCE, weather prediction, T/P altimeter
- Scientific, but not a science experiment
- Exploiting ocean predictability
- Focused, finite and with an end
- Observation technology
  - Gap (then): in situ data, …

Connections

- Ocean prediction meets climate prediction
- Ocean estimation and climate change
- Ocean prediction and reanalysis

- Hypothesis: A model that explicitly resolves variability should be better than one that does not (and for which parameterisations must be introduced)

Along the way

- **Internal metrics**
  - Scientific measure of performance – assimilation, forecast skill
- **External metrics**
  - Measuring fitness for purpose
    - Dependable, reliable, repeatable
  - Value yielding: ocean forecast services

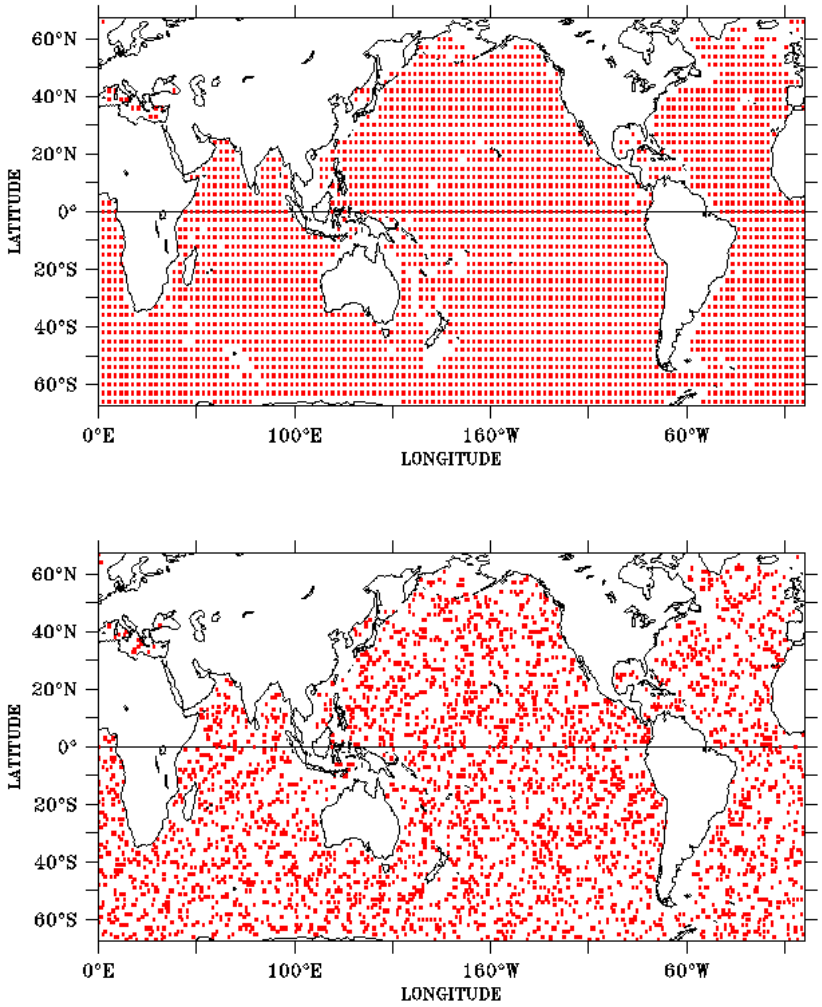
Governance

- **Partners and Patrons**
  - Doers and believers
  - Steering Committee
- **Autonomy, but also responsibility**
- **Aloof: self supporting**

Innovations

Argo

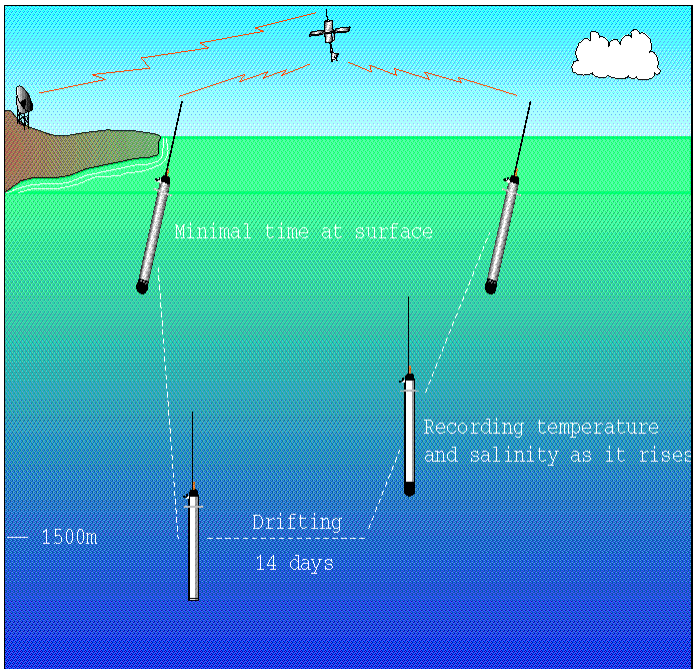
They had an idea …



Concept 1998

Dean Roemmich et al

Ray Schmidt et al



Argo circa 1998

- **"The initial (Argo) implementation will be based on a design with around 300 km resolution, global deployment, a cycle time of around 14 days, and an assumed lifetime of around 100 cycles"**
  - Cost ~ $10,000
  - .01 psu in salinity is attainable using a stable water mass at depth.
  - Around 400-500 days of salinity at best
- **Issues**
  - The most effective deployment techniques *[underestimated difficulty]*
  - Full capacity by 2003 (for GODAE); (!)
  - National commitments to ensure global coverage is achieved;
  - Communications, including cost and possible impacts on float lifetimes;
  - The optimal park depth; *[the debate was about u]*
  - Salinity drift; and
  - Methods for timely data assembly and quality control.

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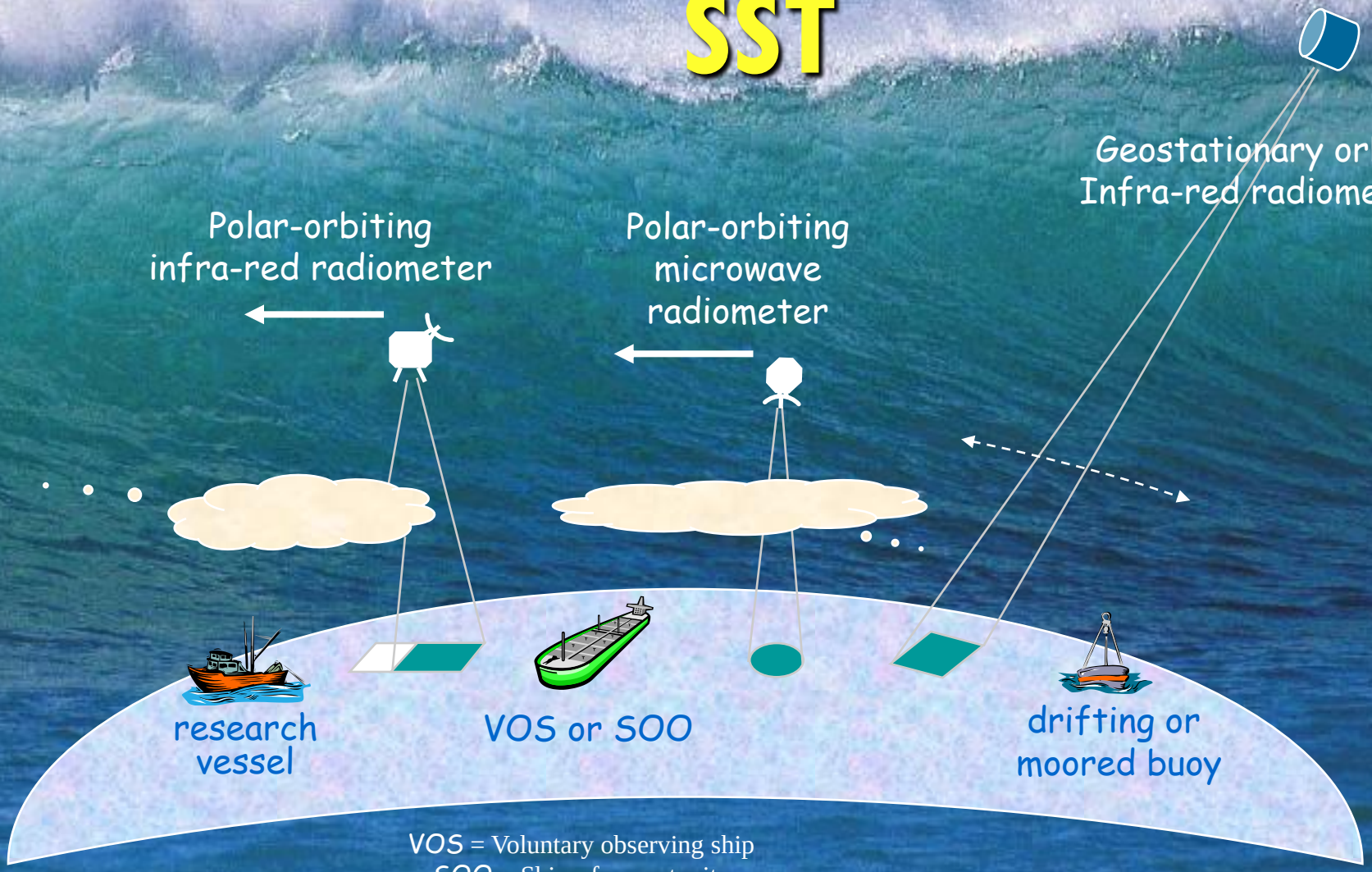
GHRSST

Platforms for Measuring SST



VOS = Voluntary observing ship
SOO = Ship-of-opportunity

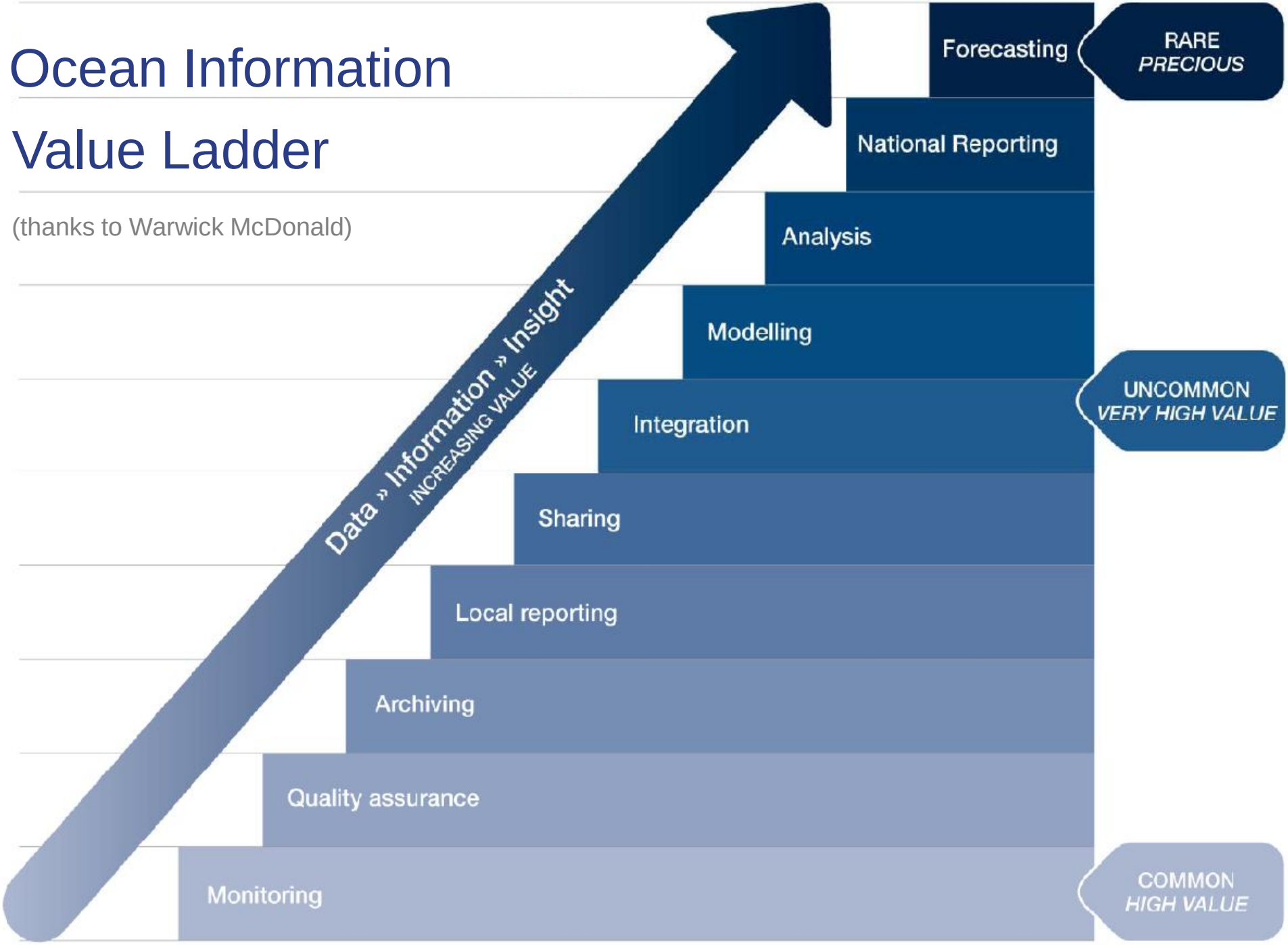
Data and information management

And more …

The future

Ocean Information Value Ladder

(thanks to Warwick McDonald)



The future

- The marine environment
- Numerical weather+ocean prediction?

The future

- **The marine environment**
- **Numerical weather+ocean prediction?**
- **Observations – dare we ask for more?**
  - Or just work to sustain what we have?
- **w**

Thank you