

The Tropical Pacific Observing System (TPOS) 2020 Project

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Outline

- The Tropical Pacific (Ocean) Observing System – status
 - Risk assessment and issues
- TPOS 2020 Workshop
 - Analysis and conclusions
- The TPOS 2020 Project
 - 1st Steering Committee meeting and Resources Forum
 - Outcomes and next steps.
- Discussion points

The Tropical Pacific Observing System: STATUS

Comprises:

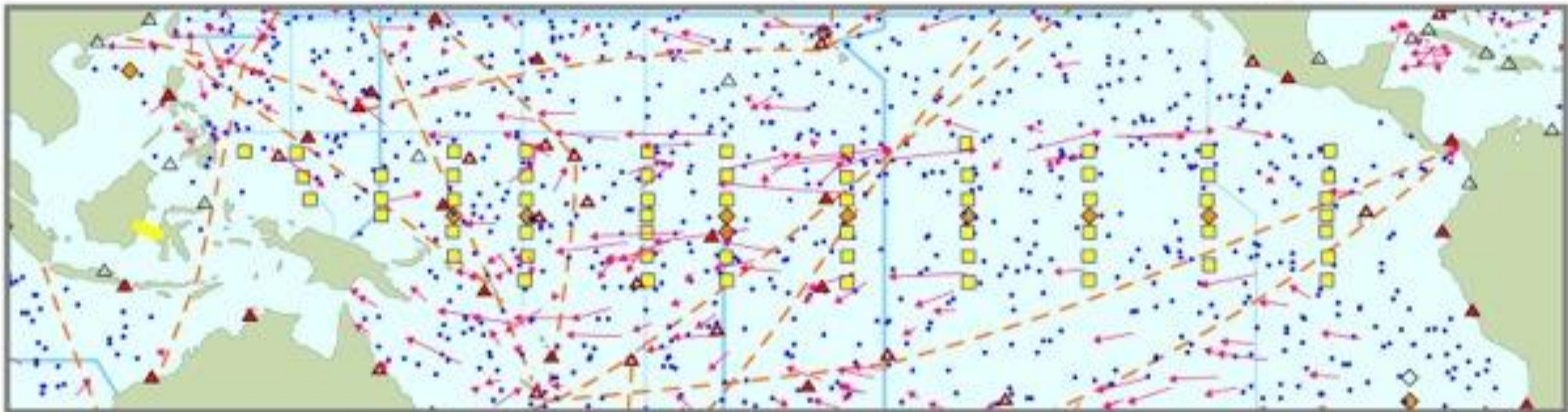
- ***Measurement networks***
- Models
- Data and Information systems
- Partnerships
- Research

- Issues and risks

The good news ...

Satellite observations:

-  SST
-  SSH
-  ocean colour
-  surface vector wind
-  surface salinity



In situ observing networks:

-  Volunteer observing ships
-  Surface drifters
-  Tide gauges
-  XBT transects
-  Argo profiling floats
-  Repeat hydrography
-  Tropical moored array
-  Time series sites
-  Emerging technologies

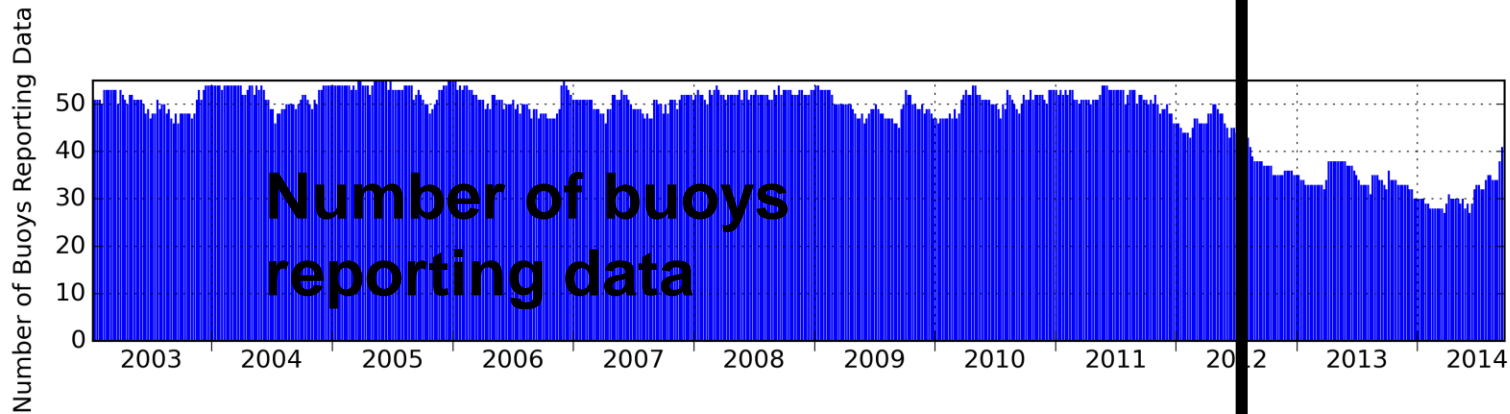
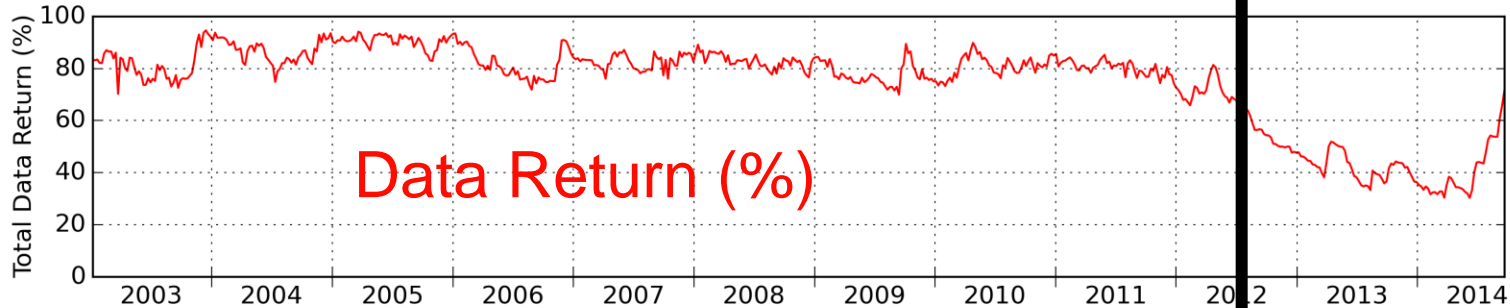
Less good news ... (But getting better)

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**TAO Array Data Return
January 2003 - September 2014**

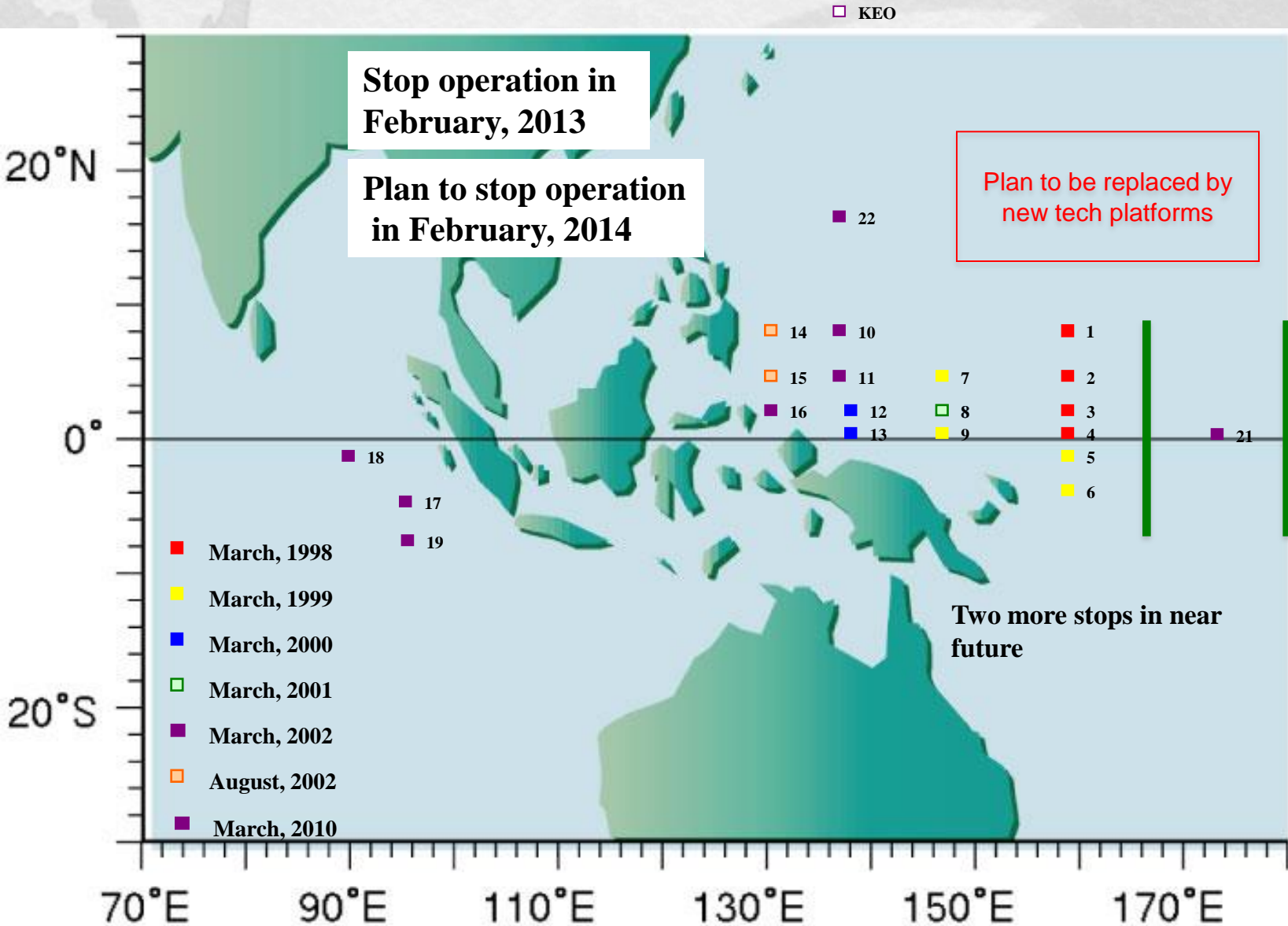
Data Source: NOAA/PMEL



McPhaden,

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Development and decay plan of TRITON buoy array



TPOS Issues and Risks

- Challenges sustaining the TAO/TRITON Mooring Array.
- Risks are not being actively monitored and assessed
 - Need to spread risk
- Requirements and applications have evolved since TOGA
 - Science has evolved
 - Increased focus on biogeochemical and biological systems
 - Multi-disciplinary approaches
- Modelling and observing technology have evolved
 - Argo, ALT, ensembles, reanalysis, ...
- Timely for a systems-based evaluation of the requirements, implementation and delivery of observations
 - Across all elements of the OS

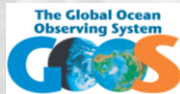
TPOS 2020 Workshop

27-30th January, 2014, Scripps Institution of Oceanography, La Jolla, USA.



- Review of observing system requirements and implementation
- Presentations on status of all aspects of system
- Presentations on potential new science and contributions

Sponsors:



Chaired by: David Anderson and Toshio Suga

Report: Published April 2014 (www.ioc-goos.org/tpos2020)

KEY RECOMMENDATION: A TPOS 2020 Project

The Review recommended the creation of a focussed

TPOS 2020 Project

- Transition from a loosely coordinated set of activities in the tropical Pacific to a systematic and sustainable TPOS by 2020.
- A PROJECT FOR CHANGE
 - Not business as usual; targeted goals, players, time
 - Of the sponsors; contribution to GOOS/GCOS, JCOMM, CLIVAR, ...
 - Managed like a major Project
 - Redesign work driven through focussed Task Teams.

Governance and structure

- Led by a Steering committee, supported by a Resources Forum, and will report to the GOOS SC (while exercising significant autonomy).
- Co-Chairs Dr William Kessler (PMEL, USA) and Dr Neville Smith (Retired, Australia)
- Significant work required to inform the redesign will be facilitated through focussed task teams.
 - 4 Task Teams (TT) were initially scoped at the workshop, and further refined at the first Steering Committee meeting.
- First SC Meeting Held 6-9th October, At KIOST, Korea.
- Formation of Resources Forum being led by NOAA
 - First meeting by telecon, immediately after SC-1.
 - Discussing mode of operation going forward with key agency partners.

1st TPOS 2020 Project SC Meeting

6-9th October 2020 hosted by KIOST in Seoul, Korea



Short Term Actions.

- Developing advice on the **Backbone** TPOS (TT)
 - Initially broadscale, generalised to address all fundamental observing contributions, no matter the scale.
 - Advise the elements of the backbone O.S. based on updated requirements, current knowledge base, and existing capabilities.
 - Includes remote sensing as well as *in situ* contributions
 - Making reasonable assumptions on the sustainability and risks.
- Prioritisation criteria for time-series climate records (recommendation from La Jolla); OOPC and OceanSites will be consulted.
- Improve **Modelling and Data assimilation (TT)**: Opportunities identified include:
 - A Workshop on systematic errors in tropical models and prediction systems
 - OSE Workshop for improved understanding of sensitivity

Longer Term Actions

- The evolution of the TPOS through design studies for the backbone (by the TT)
- Task Teams for **air-sea interaction and the ocean boundary layer**, and for **biogeochemistry and biology**, respectively.
- Achieve change in the TPOS, involving partnerships within the research/operational groups involved in observation, modelling and prediction.
 - **The Western Pacific Project**: Writing team to develop regional project plan (drawing on national/regional activities/plans). Potential future TT.
 - **The Eastern Pacific (TT)**, including the coastal region. Through TT.
 - Significant process study in the central-to-eastern Pacific, focused on improving understanding of **upwelling and mixing**, and the interaction with surface processes.

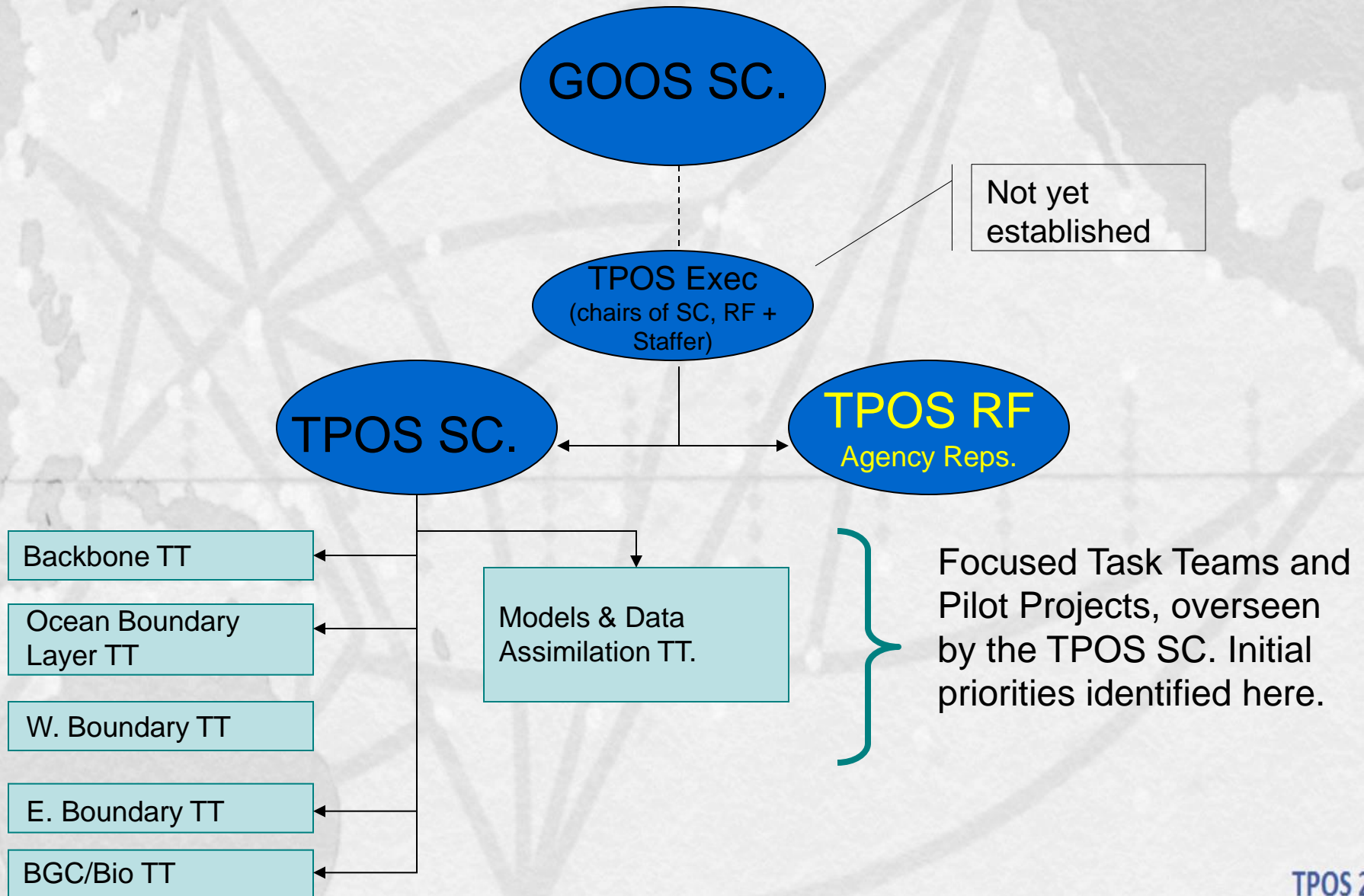
Other issues.

- **Data Management:** Integration of data across streams/observing networks identified as a challenge (possible pilot activity)
- There will be two other classes of project,
 - **Activities that may extend beyond 2020** and thus into different governance arrangements (e.g. aspects of Western Pacific project)
 - **Projects led by other groups** that have clear relevance and benefits for TPOS 2020 and its objectives. (e.g. Some of the modelling work, data and information management)

Discussion points

- The sustainability of the observing system is at significant risk
 - The community was not well prepared for present risks.
 - ***Significant change is required***
- Project is in the mode of GODAE, Argo, GHRSSST, OceanSites
 - Formed out of common sponsor and scientific partner interests;
 - Reporting line through GOOS
 - Managed as you would a major project; the project Steering Committee is responsible for delivering agreed outcomes
 - Exceptions / issues to Sponsors (TPOS RF) and/or GOOS SC
- Coordination with existing projects needed:
 - ENSO modelling (improvements) already identified as a major risk
 - Three GOOS Panels; JCOMM, CLIVAR.

Proposed TPOS 2020 Governance and Project Structure (Draft).



Thank you!

For more information, see

www.tpos2020.org

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[Craig McLean acted as Chair for inaugural TRF]