

# TPOS 2020 Project

Co-Chairs TPOS 2020 SC



# GOV ST VI 2015 “action” (not confirmed?)

- OSEval-TT to nominate an observer for the TOPO2020
- Tony Lee, with appropriate TTs, to further develop the proposal around budget closure, taking advantage of the interest in TPOS 2020 in this issue
  - Not sure where GOV landed with this; Billy Kessler has done some work
- ❖ Through the CP-TT, (and perhaps the DA TT) provide advice on observations that will be needed for developing coupled DA systems
  - Still needed
- OSEval-TT, working with the TPOS 2020 Modelling and Data Assimilation Task Team, to examine the feasibility of 1 or 2 OSE/OSSE studies that might be completed over the coming 12 months, and be a focus of the next OSEval-TT workshop
  - See Fujii and Kumar presentation to OSEVal; thanks Yosuke!
- TPOS 2020 Modelling and Data Assimilation TT to work with the Validation/OSEval- TTs on the potential for innovations to be used to guide TPOS 2020 design and to identify hot spots for systematic errors.
  - In progress
- MEAP-TT Co-Chairs to discuss options for cooperation with the TPOS 2020 Biogeochemistry TT
  - Met after GOV ST VI but interaction since? Needed for 2<sup>nd</sup> Report.
- ❖ **In reality, little influence on the first Report, but potential for second.**

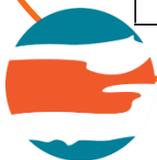
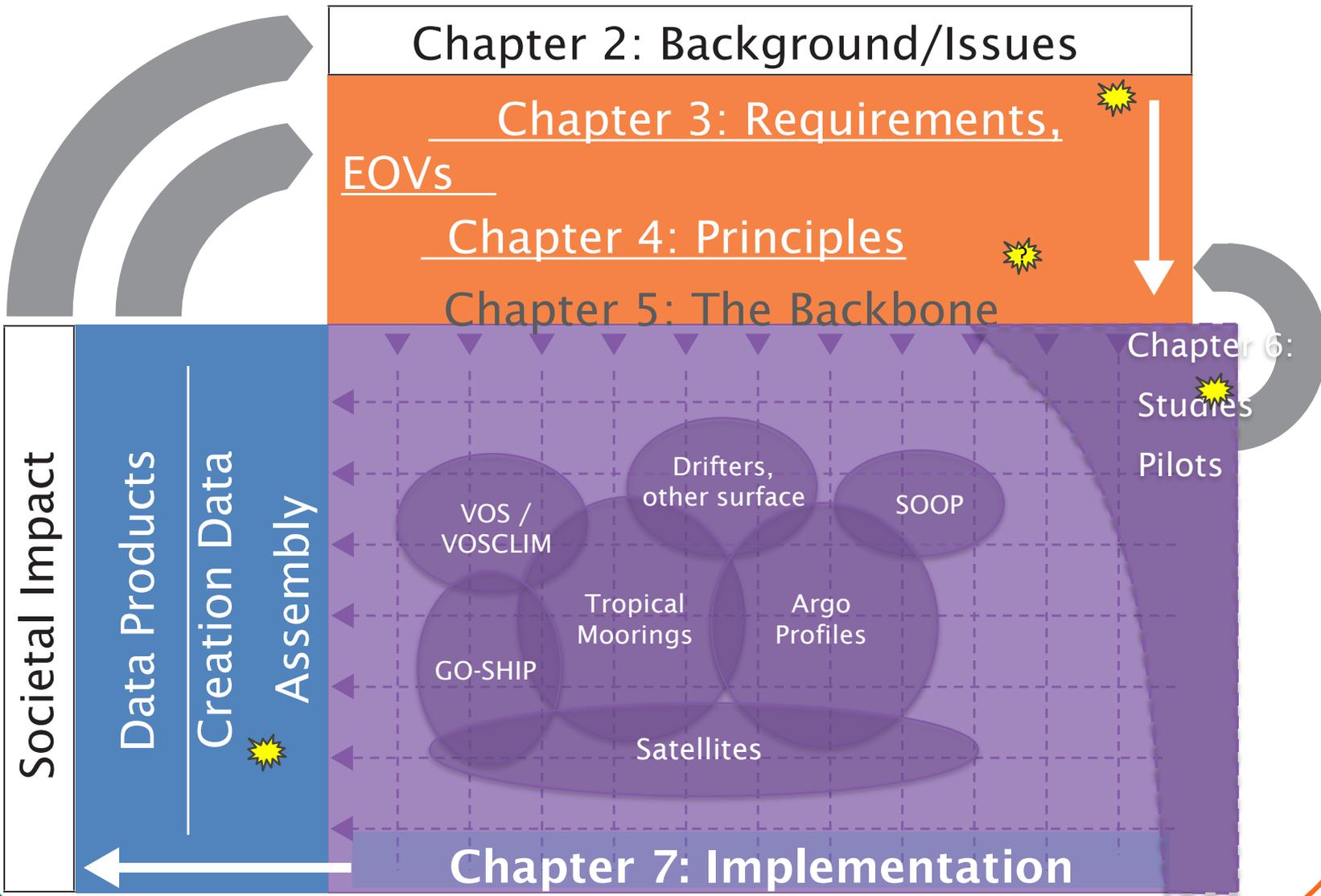


# The First Report

- **Published**
  - Published 30th December 2016 (GOOS-215)
  - Exec summary translated and published (6 languages)
- **Analysis of requirements**
  - Comprehensive
  - Balmaseda et al (White paper, 2014) and Fujii et al (QJRMS 2015) influential papers
- **Design Principles**
  - read with GCOS, WIGOS Principles
- **22 Recommendations**
  - Many taking long view, beyond TPOS 2020
  - Main link to GOOS/GCOS (and JCOMM)
- **15 Actions**
  - TPOS 2020 SC, JCOMM, ...
  - All actions relevant for GOV but closest ties through 14 (pilots 6.1.6, 6.1.7; Fujii and Kumar)



Framework for Ocean Observing Process Diagram



# Recommendations

- Maintain **space-based** broad-scale measurements of the essential ocean surface variables
  - vector winds, SSH, SST, SSS, precipitation, and ocean color)
- Maintain in situ measurements to improve the calibration, evaluation and validation of the satellite measurements, and inter-calibrate satellite missions and instruments.
- Enhance in situ obs of state variables to estimate surface heat and freshwater fluxes, focus on key climate regimes.
  - Satellite-based estimates remain problematic
  - NWP/Reanalysis biases remain large
    - NWP community has recommended work; We must take up offer
  - Primary requirement is to improve understanding, models → key climate regimes



# Recommendations (2)

- Reconfigure the fixed-point moored array:
  - more capable moorings, targeting the equatorial circulation, the mixed layer and its interaction with the atmosphere, and key regimes,
- Double subsurface temperature and salinity profiling throughout the tropics (10S-10N) through an enhanced Argo presence, and
- **Initiate pilot and process studies to guide the future design**, using the most effective combination of platforms and technologies.



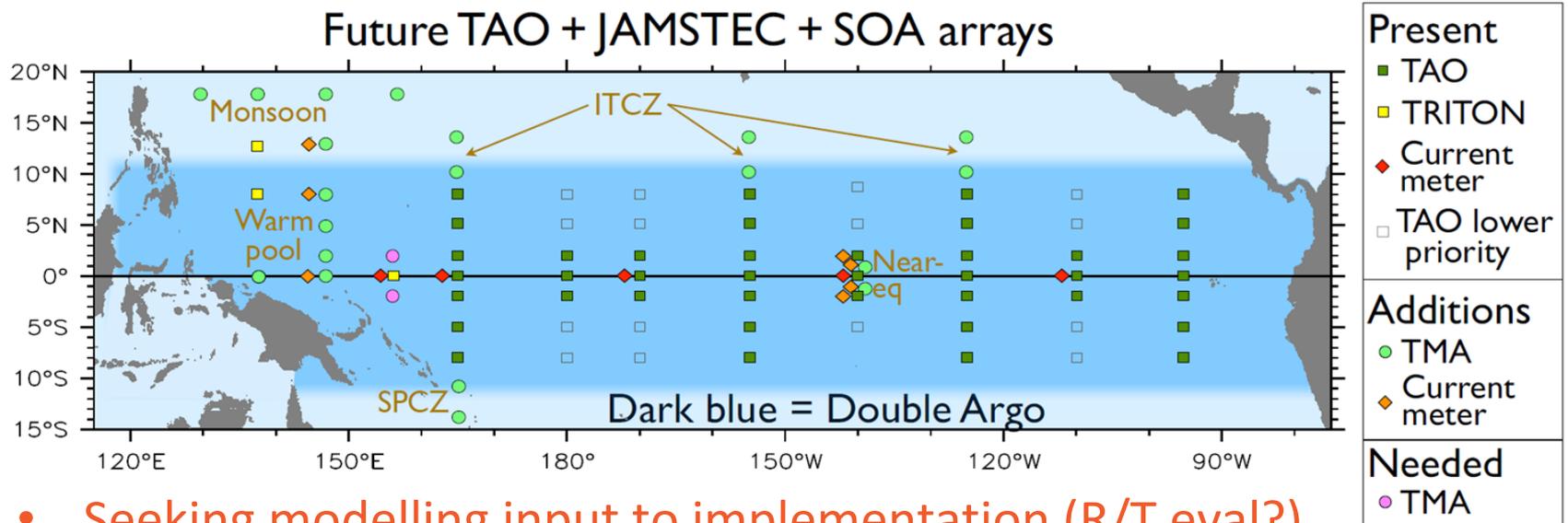
# Towards Implementation

- Developed Roadmap for future implementation
  - Endorsed by sponsors – 15 Agencies
- Established Transition and Implementation Task Team with JCOMM
  - Now a WIGOS Pre Operational Regional Pilot
  - WMO **EC-69 TPOS decision**
  - **JCOMM-V Decision 7.1/6**
- Western Pacific implementation moving quickly
  - Good links with YMC



# Western Pacific Implementation

- Establishing WP Implementation Pilot
  - Defining “core” TMA; Data management team



- Seeking modelling input to implementation (R/T eval?)
  - Including Low Latitude Western Boundary Current Pilot

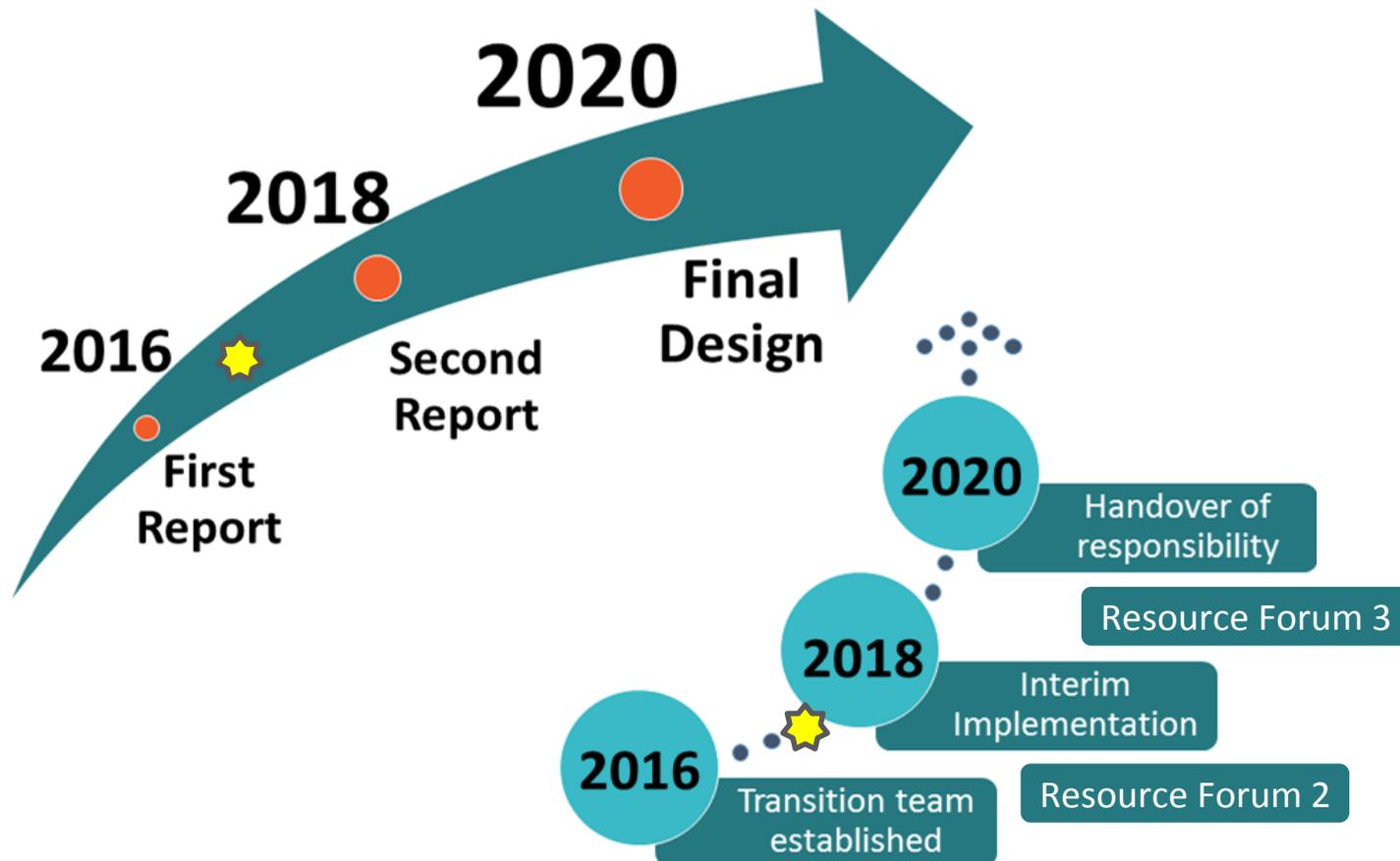


# TPOS 2020 2<sup>nd</sup> Report Outline

1. Introduction and background
2. Coupled weather and subseasonal applications
  - Link to GOV CP-TT (thanks to Gary B for advice on possible authors)
3. Biogeochemical and ecosystem backbone observations
  - Eager for MEAP TT engagement, particularly for marine ecosystem part
4. The current state of coupled models for sub-seasonal to interannual predictions
  - An IPCC-like assessment, but slimmer and quicker. Will be seeking DA and OSEVal input
5. Developing an Eastern Pacific backbone OS
  - Relevant GOV ST activities?
6. The TPOS 2020 Backbone Observing System
  - Additional advice (e.g. as Fujii and Kumar/OSEVal) appreciated
  - [Progress with implementation, incl. pilots 6.1.6 and 6.1.7 and process studies]
7. TPOS data flow and access
  - Completely new. Themes around reprocessing/discovery data, improving access, and reanalysis (e.g., western Pacific/low-latitude western boundary current; whole of TPOS). Aiming for quality not quantity.
8. An evaluation of new technologies
  - Mainly platforms but open to M&DA innovation
9. Summary and conclusions



# Schedule



# Conclusions

- TPOS 2020 is progressing well and on track
- Strong endorsement of 1<sup>st</sup> Report
  - Demonstration of Framework for Ocean Observing
  - Careful articulation of what we mean by requirements
  - Minimal impact of modelling/assimilation in design  
BUT it remains a core principle
- Several links into GOV
  - OSEVal, CP TT, MEAP TT, DA TT, ...
- Look forward to engagement around 2<sup>nd</sup> Report



We acknowledge the strong commitment and work of the TPOS 2020 community, and the many who provided review and comment, sometimes several times.

**THANKS**

