FVON GOOS Network OCG-16 Report

Fishing Vessel Ocean Observing Network (FVON)
Prepared/submitted by Aubrey Taylor, Cooper Van Vranken, and A. Miguel Santos

1. Highlight the key network successes
   - Formation of an international and interdisciplinary governance structure
   - Endorsement from GOOS
   - UNDOS under CoastPredict Program
   - Pilots in high-impact and under-observed geographies: Papua New Guinea, Fiji, Norfolk Island, Southern Ocean, Ghana, Bahamas, and Tanzania.

2. How has the network advanced across the OCG Network Attribute areas[1]
   Maintains network mission and targets:
   - On track for our one-year action plan including business/governance/communications strategies
   - Ratified Terms of Reference for the Steering Committee and Secretariat
   - Monthly SC and Secretariat meetings

   Global in scale:
   - International observational programs and SC (Australia, Italy, Japan, New Zealand, Portugal, Sweden and USA)
   - Pilots in high-impact and under-observed geographies: Papua New Guinea, Fiji, Norfolk Island, Southern Ocean, Ghana, Bahamas, and Tanzania.
   - Looking to expand further in Africa (e.g.,S. Tomé & Principe, South Africa), Pacific Islands, South America and SE Asia (e.g., Thailand)

   Sustained observations:
   - Programs range from <1 year to several years (>20 years) running
   - We have >500 vessels collecting data concurrently
   - Funding is generally not sustained; however, there are some notable exceptions. The Fish-SOOP program in Australia has sustained funding from IMOS, and a model where fishing boats pay the upfront equipment costs.

   Community of practice:
   - Steering Committee with two co-chairs
   - Secretariat

---

[1] https://oceanexpert.org/downloadFile/45372

- Former larger inclusive Member Committee
- Subcommittees: Financial Innovation and Data Management
- Task Teams: Sensor Intercomparison
- Targets for diversity in leadership
- Best practices and capacity building are core pillars of our strategy

Delivers data that are free, open and available in a timely manner:
- Several programs send data to the GTS
- Several programs send data to EMODnet and CMEMS
- Data Management Subcommittee making progress on an FVON data portal
- FVON-Bahamas delivering data to meteorological organizations
- FVON-eMOLT Program delivering data to US Coast Guard for search and rescue operations
- FVON-SFiN Program delivering data to fishermen to support Japanese fishing activities, but data are closed.

Observe one or more Essential Ocean Variables or Essential Climate Variables:
- Temperature (subsurface) (Primary focus)
- Salinity (subsurface)
- Dissolved Oxygen
- Some groups working with surface-met stations and subsurface currents

Develops, updates, and follows Standards and Best Practices:
- Formation of Data Management Subcommittee and Sensor Intercomparison Study Task Team

3. Future Plans[2] and Opportunities - at network and/or cross-network OCG level
   - Implementation of communications plan by Secretariat
   - Implementation of business plan with market analysis and fundraising strategy by Financial Innovation Subcommittee
   - Collaborations with private blue economy companies
   - FVON federated data portal
   - Development of further global best practices for sensors and data management documents
   - SC membership expanded to more geographies
   - Cross-network collaboration, namely with the Argo and SOT Programs (e.g., some members are also involved in them)
   - Collaboration with other ocean observing networks (e.g., EMSO-ERIC, IOOS and IMOS)

---

[2] Future plans on implementation, instrumentation, data management, test, new sensors, plan for new EOV/ECV observations, capacity development, etc.

- Expand fisher centric tools to incentivize data collection
- Expand fisheries science and management use cases and develop data products: opens up more funding opportunities, as well as linking to FAO priorities which we hear are key for developing nations to put funding forward.

4. Challenges and Concerns - at network and/or cross-network OCG level
   - Find a way to have a basic budget for running the network
   - Produce a concise global FVON data set from different fishing gears
   - Extend biogeochemical sensors (e.g., DO, Chla and pH) to FVON
   - How to balance open data with trying to tap into financing from private sector?

5. Asks from OCG (Exec, networks, OceanOPS, and/or GOOS), perhaps related to the responses to parts 3 and 4 and how OCG can support your network
   - Incentivizing GTS contribution when the funding may be for fisheries science applications and the data is very coastal?
   - Possible link to WMO member state obligations or IOC recognition?
   - Financial Innovation subcommittee: Buyers club of countries to make advanced commitments for monitoring? Has this been done before?
   - Opportunities for cross network collaborations?

6. Recent publications, articles, etc. (if you want to share)

Peer Reviewed:
- Roughan, M., J. Li, and T. Morris (2025). Advancing observations of western boundary currents: Integrating novel technologies for a coordinated monitoring approach. In Frontiers in Ocean Observing: Marine Protected Areas, Western Boundary Currents, and the Deep Sea. E.S. Kappel, V. Cullen, G. Coward, I.C.A. da Silveira, C. Edwards, P. Heimbach, T. Morris, H. Pillar, M. Roughan, and J. Wilkin, eds, Oceanography 38(Supplement 1). https://doi.org/10.5670/oceanog.2025e116
- Lago, V., M. Roughan, C. Kerry, and I. Knuckey (2025). Fishing for ocean data in the East Australian Current. In Frontiers in Ocean Observing: Marine Protected Areas, Western Boundary Currents, and the Deep Sea. E.S. Kappel, V. Cullen, G. Coward, I.C.A. da Silveira, C. Edwards, P. Heimbach, T. Morris, H. Pillar, M. Roughan, and J. Wilkin, eds, Oceanography 38(Supplement1). https://doi.org/10.5670/oceanog.2025e105.
- Hirose N, Takikawa T, Ito T, Nagamoto A, Takagi N, Kokubo T, Kimura M, Yabuki Tand Hazama T (2024) Positive data circulation established by Kyushu Smart Fisheries (QSF) team. Front. Mar. Sci. 11:1457272. https://doi.org/10.3389/fmars.2024.1457272
- Jakoboski, J., Roughan, M., Radford, J., de Souza, J. M. A. C., Felsing, M., Smith, R., Puketapu-Waite, N., Orozco, M. M., Maxwell, K. H., & van Vranken, C. (2024).

Partnering with the commercial fishing sector and Aotearoa New Zealand's ocean community to develop a nationwide subsurface temperature monitoring program. Progress in Oceanography, 225, 103278. https://doi.org/10.1016/j.pocean.2024.103278

- Kerry, C., Roughan, M., & Azevedo Correia de Souza, J. M. (2024). Assessing the impact of subsurface temperature observations from fishing vessels on temperature and heat content estimates in shelf seas: a New Zealand case study using Observing System Simulation Experiments. Frontiers in Marine Science, 11: 1457272. https://doi.org/10.3389/fmars.2024.1358193
- Martinelli, M., Penna, P., Guicciardi, S., Duchene, J., Haavisto, N., Marty, S., King, A., Van Bavel, B., Ødegaard, Ø., & Ntoumas, M. (2023). NAUTILOS D5.6 – Validation and integration report on ships of opportunity. Zenodo. https://doi.org/10.5281/zenodo.10909202
- Van Vranken, C., J. Jakoboski, J.W. Carroll, C. Cusack, P. Gorringe, N. Hirose, J. Manning, M. Martinelli, P. Penna, M. Pickering, A.M. Piecho-Santos, M. Roughan, J. de Souza, and H. Moustahfid. 2023. Towards a global Fishing Vessel Ocean Observing Network (FVON): state of the art and future directions. Frontiers in Marine Science 10:1176814. https://doi.org/10.3389/fmars.2023.1176814
- Penna, P., Domenichetti, F., Belardinelli, A., and Martinelli, M (2023). Dataset of depth and temperature profiles obtained from 2012 to 2020 using commercial fishing vessels of the AdriFOOS fleet in the Adriatic Sea, Earth Syst. Sci. Data, 15: 3513-3527. https://doi.org/10.5194/essd-15-3513-2023

News and other:
Dialogue earth article with some other GOOS networks:
https://dialogue.earth/en/ocean/scientists-are-becoming-ocean-hitchhikers-to-fill-data-gaps/

Blog post on hurricane data use case:

https://blogs.edf.org/edfish/2024/11/27/how-fishers-are-protecting-their-communities-from-hurricanes/