Digital journey towards a Shared Environmental Analytics Facility (SEAF)

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Agenda

- Background / journey
- Current work
- Next steps

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Background

- Review of the EPBC Act has proposed a vision of improved environmental outcomes, combined with **transparency** around **faster** and lower-cost decisions
- Cumulative impacts not currently addressed, focuses on single projects

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Background

- Digitally Transforming Environmental Impact Assessment (EIA)
- Drivers
  - Efficiency for proponents,
  - Confidence for regulators,
  - Transparency / clarity for community
- Robust, Repeatable and Sustainable

Improved environmental and economic outcomes

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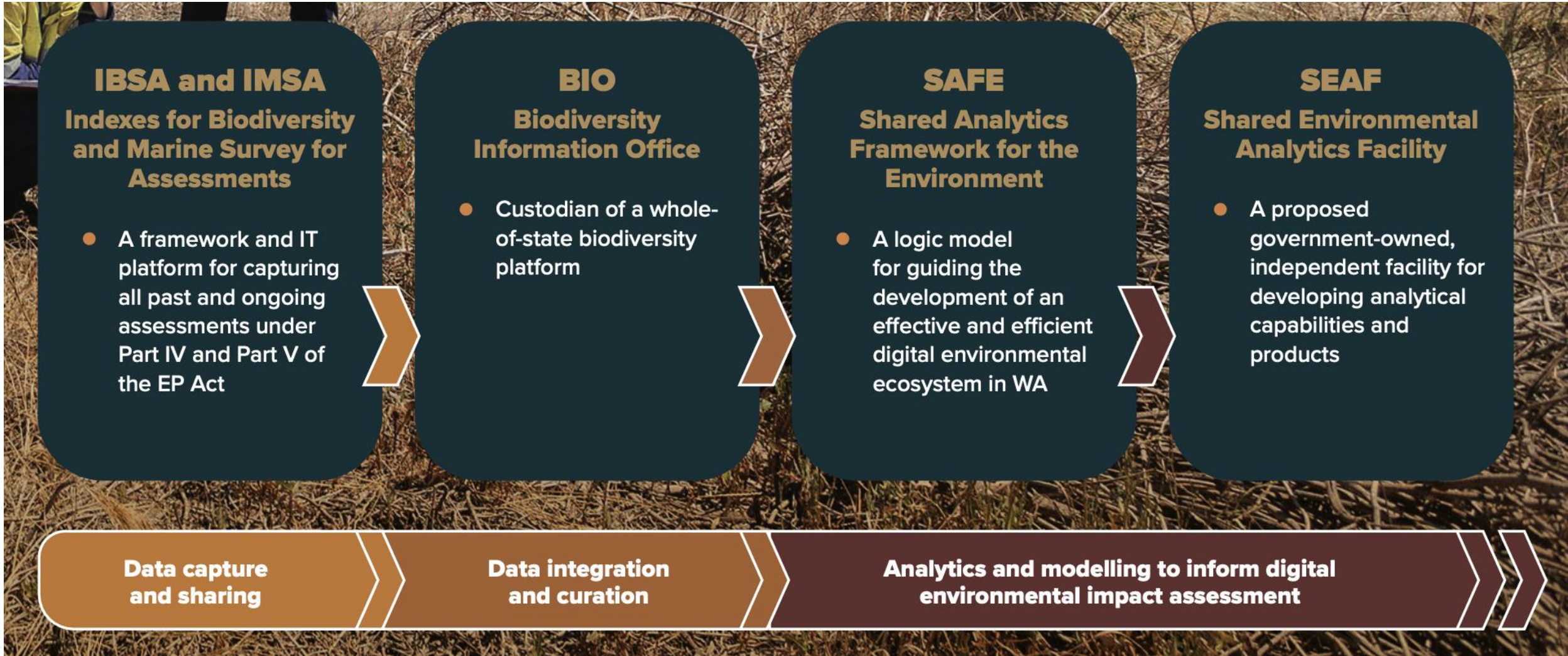
Journey


IBSA and IMSA
Indexes for Biodiversity and Marine Survey for Assessments
A framework and IT platform for capturing all past and ongoing assessments under Part IV and Part V of the EP Act
BIO
Biodiversity Information Office
Custodian of a whole-of-state biodiversity platform
SAFE
Shared Analytics Framework for the Environment
A logic model for guiding the development of an effective and efficient digital environmental ecosystem in WA
SEAF
Shared Environmental Analytics Facility
A proposed government-owned, independent facility for developing analytical capabilities and products
Data capture and sharing
Data integration and curation
Analytics and modelling to inform digital environmental impact assessment

https://biocollect.ala.org.au/imsa

GOVERNMENT OF WESTERN AUSTRALIA
Department of Water and Environmental Regulation

Very High Resolution Seafloor Classification and Satellite Derived Bathymetry of Swanbourne, Australia

EOMAP

Start date: 03 June, 2019
End date: 03 June, 2019

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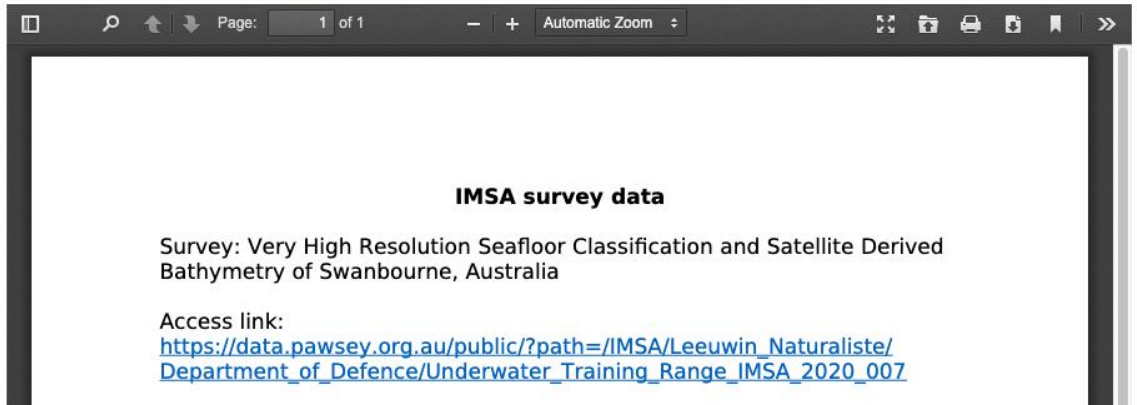
Found 1 Resources

survey data

Description | Preview | Download

Information



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RINE SCIENCE
'ITUTION

PAWSEYDATA [MY DATA] [TOOLS] [INFO]

projects / IMSA / Central_West_Coast / Department_of_Defence / **Underwater_Training_Range_IMSA_2020_008**

Filter results by ... Go include sub-folders

	Name	Size
	Bathymetry	-
	BenthicHabitats	-
	EOMAP2Aurecon_2079_SurveyReport_Lancelin_20190807_Vs1.pdf	96 KB
	EOMAP2Aurecon_2079_SurveyReport_Lancelin_20190807_Vs1.txt	3 KB
	IMSA Data Package - Metadata and Licensing Statement_Lancelin.pdf	220 KB
	Metadata_Lancelin.txt	7 KB

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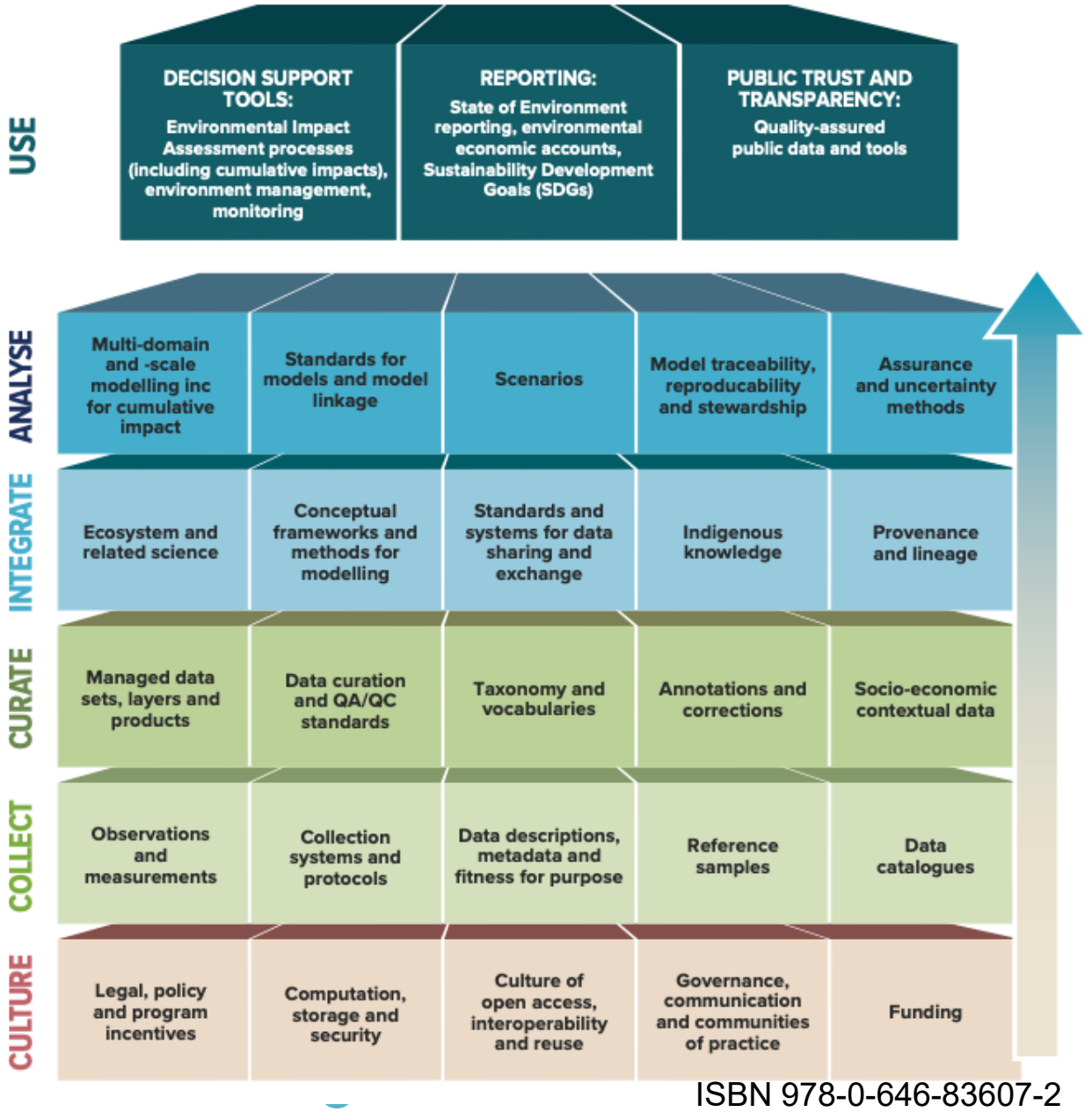
Journey

- SAFE depicts the capabilities (the building blocks) which work together across the information and analytic supply chain to provide input decision-support and reporting tools for environmental assessments

- SAFE has been developed by WABSI, WAMSI and many others[1]



[1]Delivering Biodiversity Knowledge in the Information Age. Available at: https://doi.org/10.15468/6jxa-yb44. Global Biodiversity Information (GBIO) Outlook[1]

ISBN 978-0-646-83607-2

Journey

- SAFE / SEAF have been identified as leading examples globally
  - UN Biodiversity Conference (COP 15) (7-19 December 2022 in Montreal)
  - Taskforce on Nature-related Financial Disclosures (TNFD) https://tnfd.global/

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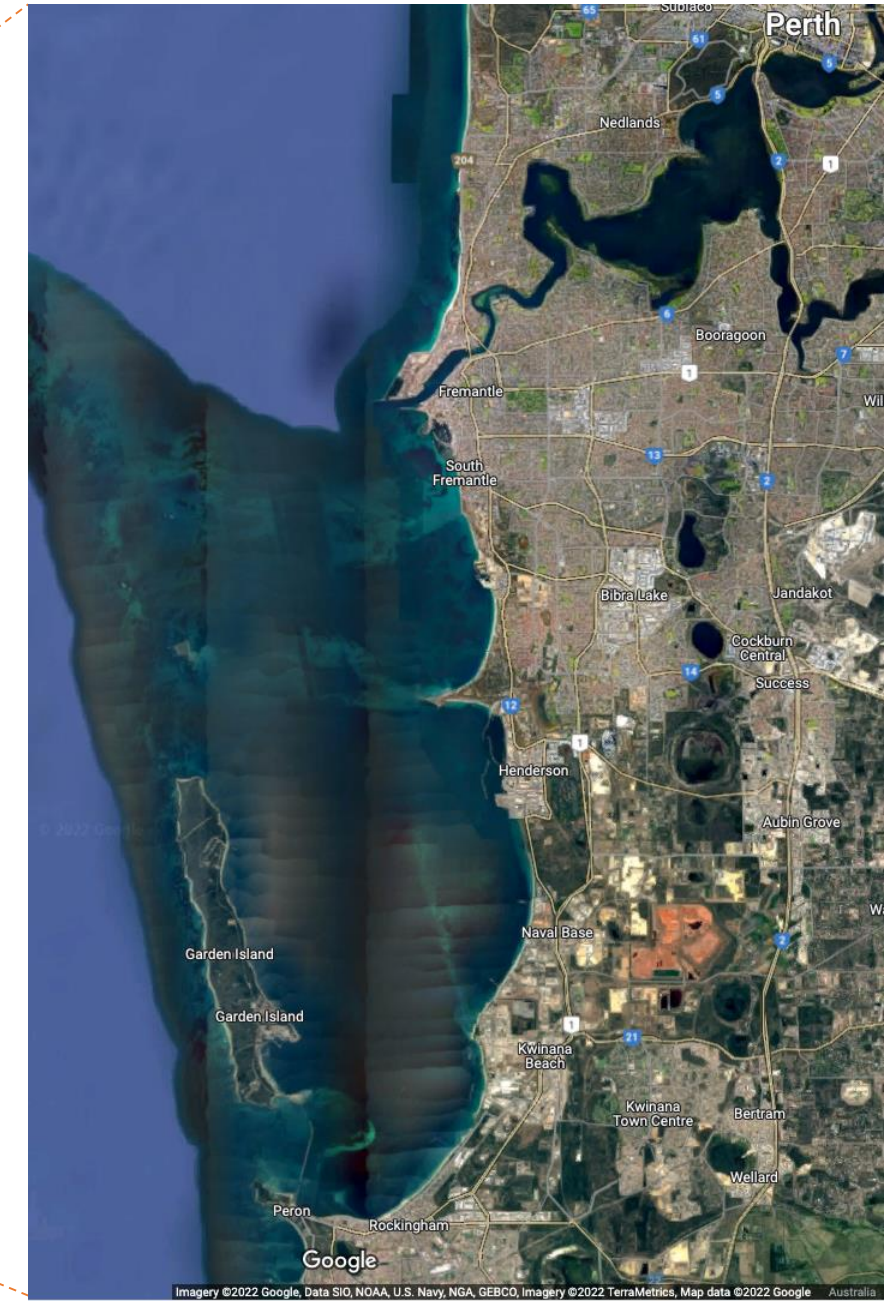
How does Cockburn Sound fit in to this?



Westport is the State Government's long-term program to investigate, plan and build a future port in Kwinana with integrated road and rail transport networks - https://westport.wa.gov.au/

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Background

Westport has partnered with the Western Australian Marine Science Institution (WAMSI) to undertake 30 comprehensive marine science studies over the next three years.

One of these studies was "*To establish an Integrated Ecosystem Modelling Framework for Cockburn Sound to facilitate Westport cumulative EIA and make progress towards the development of a Strategic Assessment Framework for the Environment (SAFE)*"

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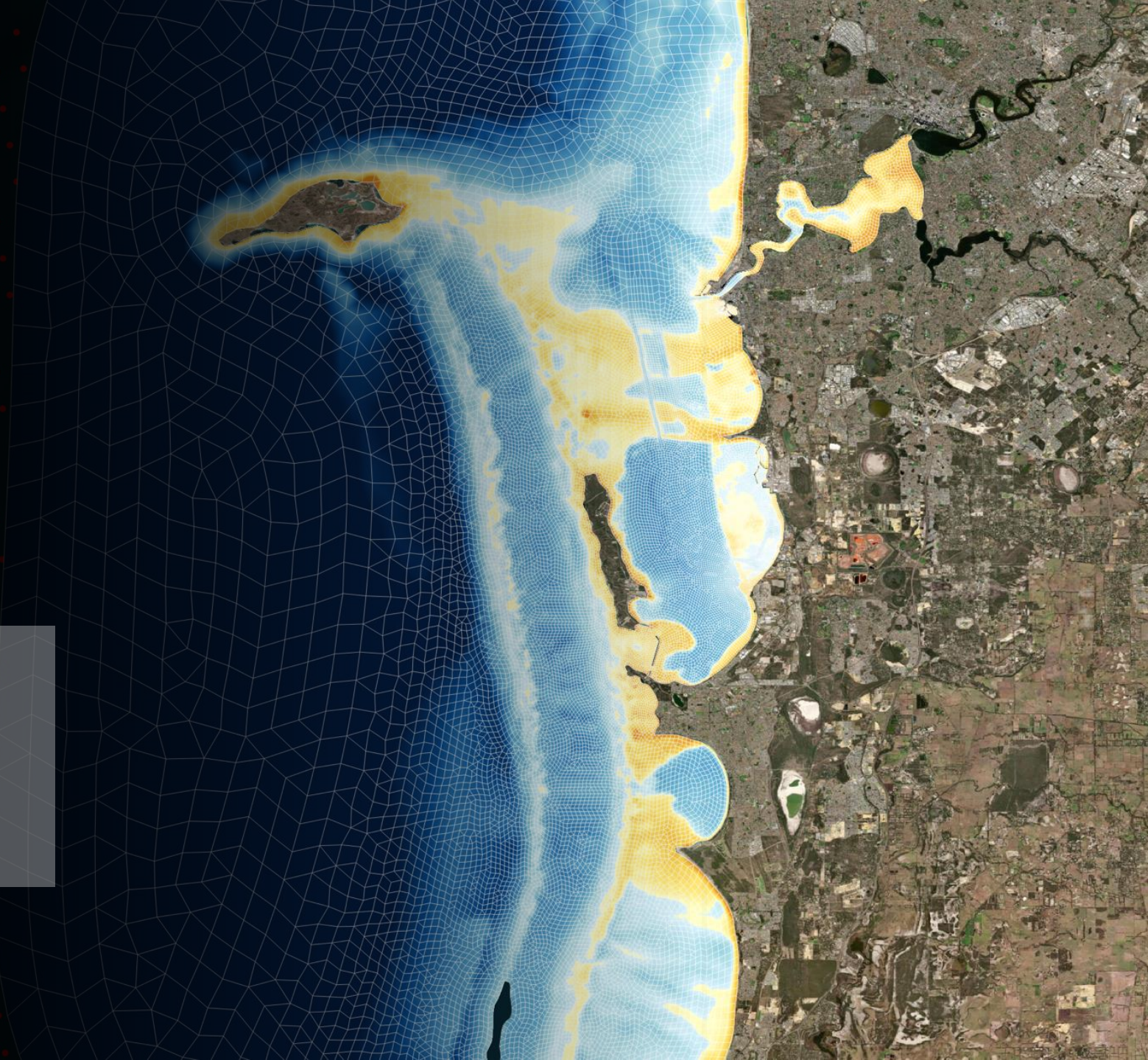
Better science **Better decisions**



Theme 1

1.1 Integration & shared analytics

1.2 Water quality model of Cockburn Sound

1.3 Ecosystem / Foodweb model

Matthew Hipsey

Peisheng Huang

Brendan Busch

Sherry Zhai

Project 1.2 Team : Matthew Hipsey, Peisheng Huang, Brendan Busch, Sherry Zhai
Louise Bruce, Gayan Gunaratne, James Davies, Peter Fearns, Dan Paraska

Contributors: Chris Gentle, Alicia Sutton, Ivica Janekovic, Renae Hovey, Kathryn McMahon, Lee Goodyear …

WWMSP: Project 1.2

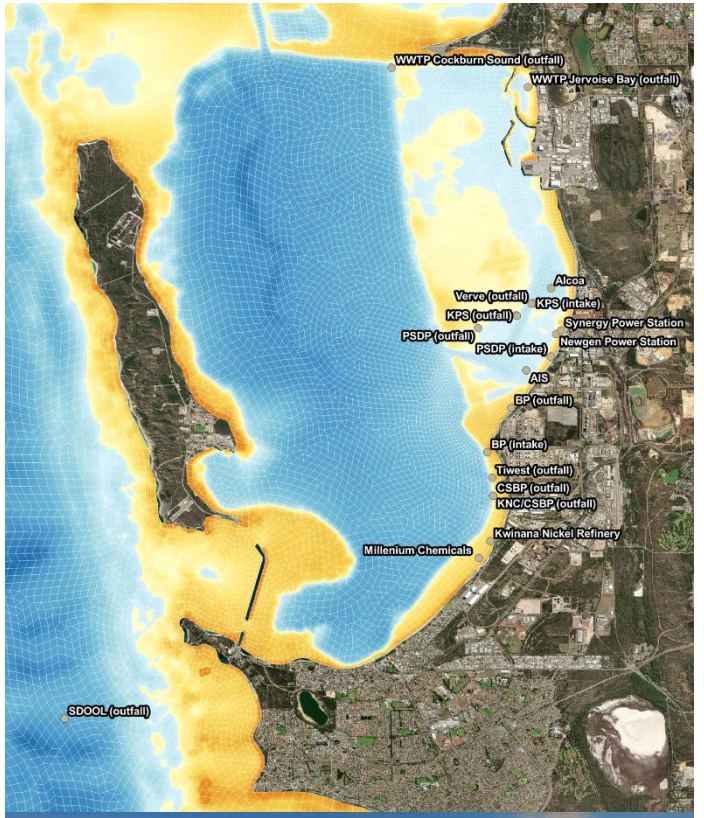
Water quality model of Cockburn Sound

Cumulative stresses resolved as multiple effects on environment

- Surface water inputs:
  - Stormwater
  - Discharges (process effluent)
  - Discharges (cooling waters)
  - Discharges (WWTP)
- Groundwater inputs

Historical -> Current -> Future reconstruction required

- Legacy sediment loads
- Operational impacts
  (e.g. shipping activity, dredging plumes)
- Bathymetric, structure changes
- Climate change
  (e.g., marine heat waves, sea level rise, extreme events)
- Aquaculture



ROMS

Regional hydrodynamic conditions

BARRA, WRF

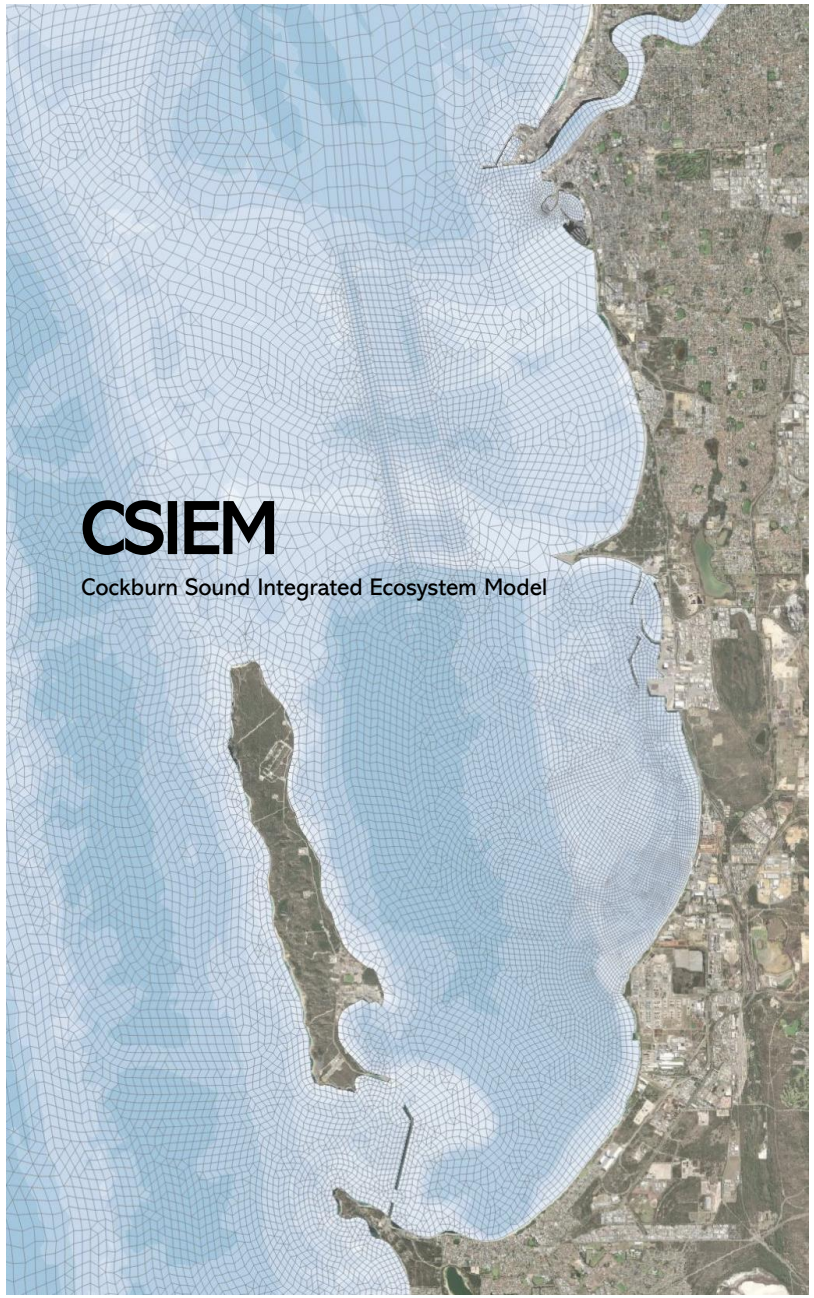
Weather conditions

SWAN, WWM

Wave conditions

GIS

Benthic habitat



Swan Estuary inputs

SCERM

Local discharges/intakes

PSDP, SDOOL,
… Industry …

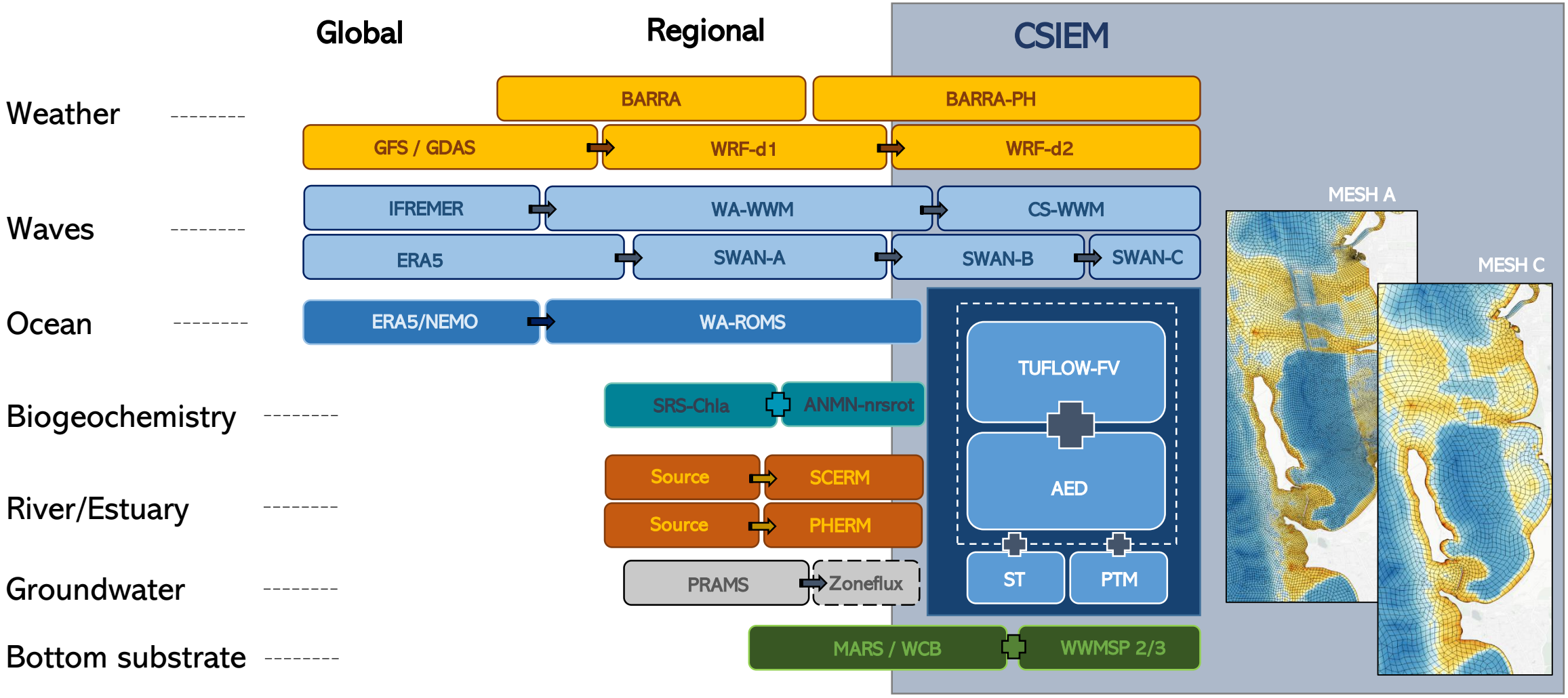
Local groundwater inputs

PRAMS

Local activities

Shipping, Berthing,
Dredging, Spoil,
Aquaculture, etc.

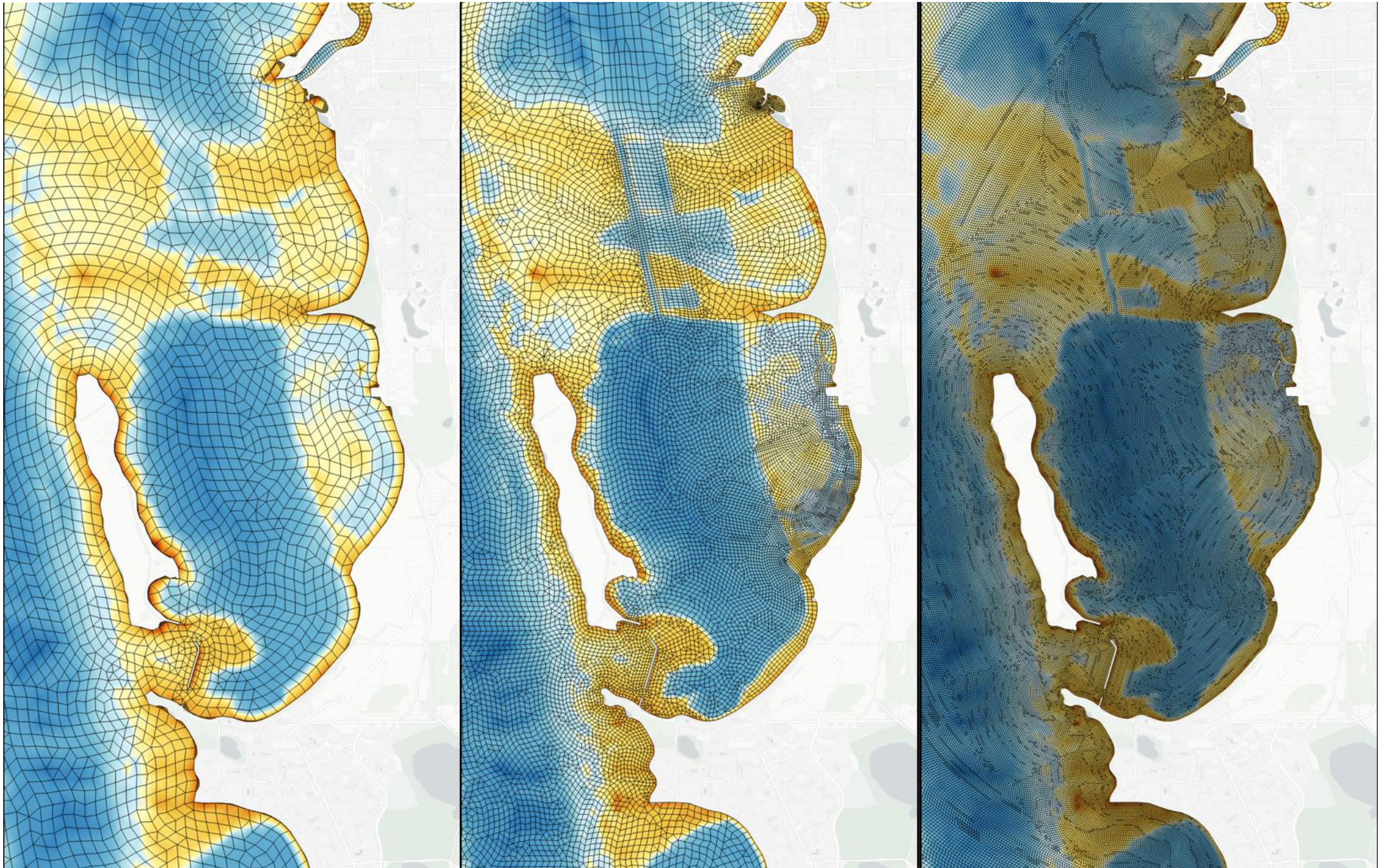
Integrating across models across scales



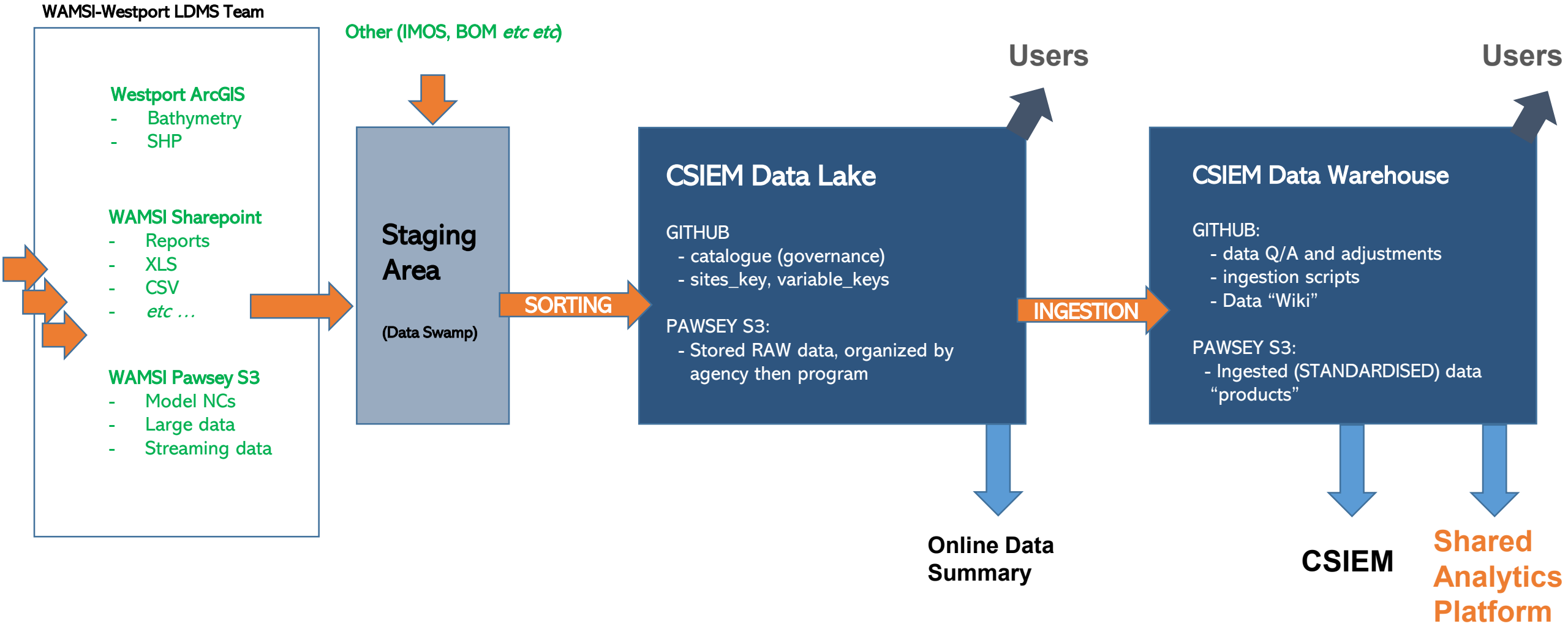
csiem-mesh- A (Low resolution)
11694 cells
400m CS resolution

csiem-mesh- B (Cycle 1 optimised)
30211 cells
200m CS resolution

csiem-mesh- C (High resolution)
147874 cells
65m CS resolution



Data integration workflows



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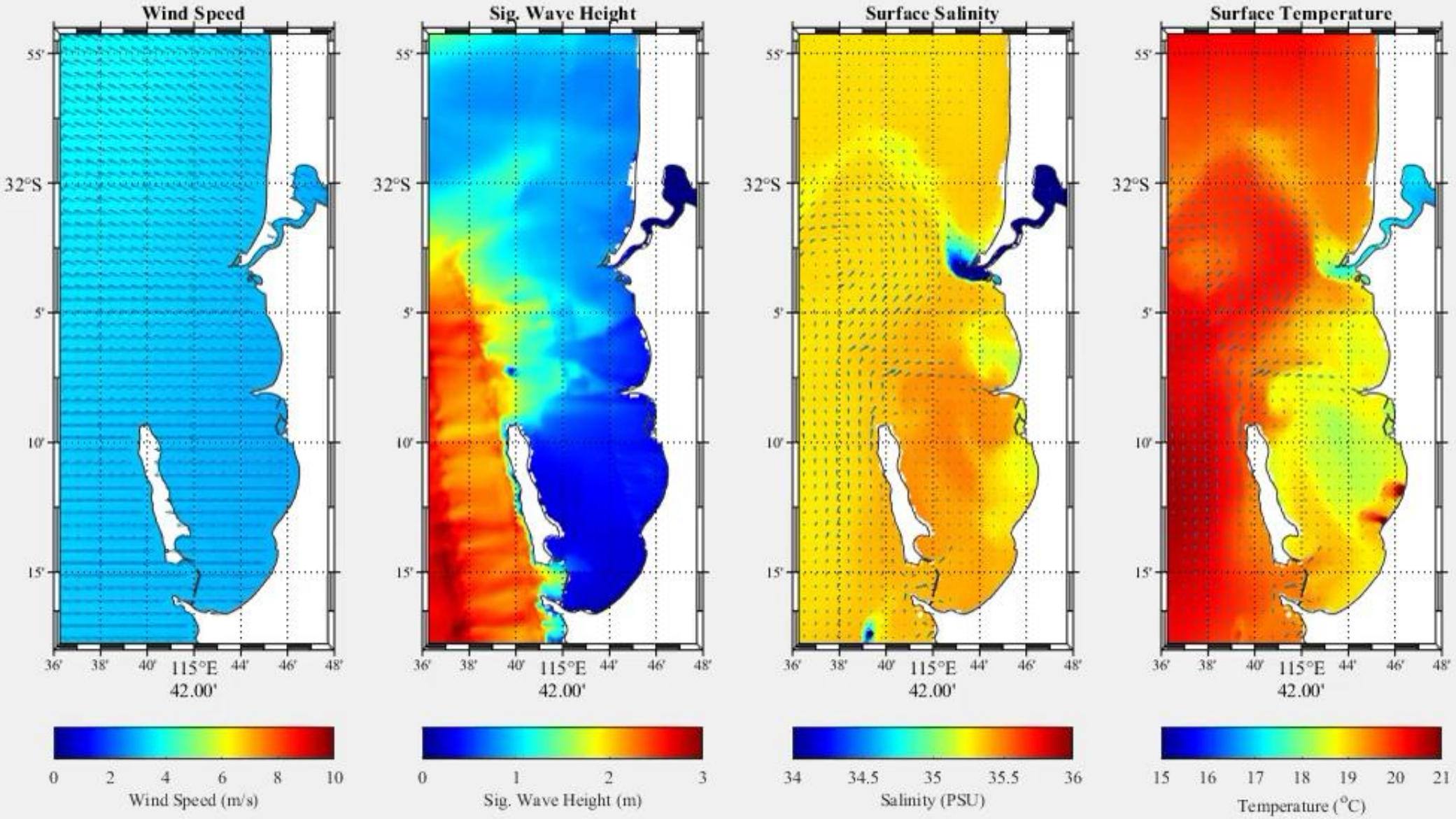
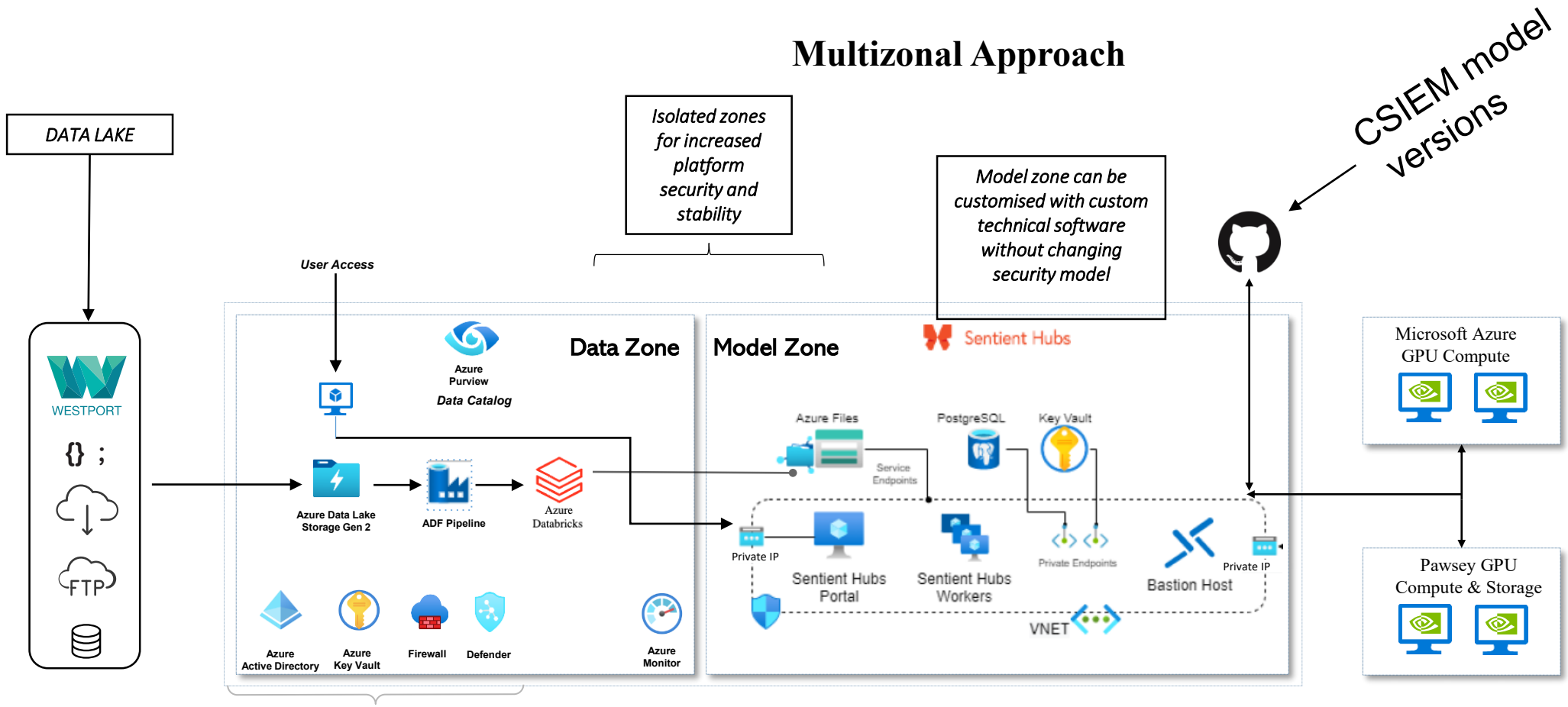


Cockburn Shared Analytics



Future

- Planet Research Data Commons (ARDC)
  - A workshop (June 2023) was co-hosted by the ARDC, WABSI and WAMSI – 4 key recommendations.
  - Part of ‘Trusted Data and Information Supply Chains’ Focus Area

- Department of Climate Change, Energy, the Environment and Water (DCCEEW)

Further information:
https://ardc.edu.au/article/building-trusted-and-reliable-environmental-data-and-information-supply-chains-in-australia/

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Next steps

It is recommended that a taskforce of interested stakeholders is established to build on the Pilbara *SEAF feasibility study* and *SAFE guide* by:

1. Conducting a **collaborative project** to refine cross-sector (industry, research, research infrastructure, government) approaches to building an environmental data and information supply chain that allows for **future trend and cumulative impact analysis** in the Pilbara region of Western Australia (including Products, Data and analytics, Platform, Science, and Management)
2. Identify mechanisms required for the environmental data and information supply chain to operate effectively including mechanisms for **accrediting the trustworthiness** of providers of data and services (e.g. CoreTrustSeal), common data governance frameworks, data sharing protocols, licences, and for operationalising agreements (e.g. service-level agreements) between organisations for providing **enduring data and services**
3. Identify means to reduce the cost of data integration, including data being **FAIR from the point of creation** and throughout the environmental data and information supply chain
4. Develop an **investable plan** that delivers enduring environmental data and information supply chain capability for the Pilbara region.

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Thank you!

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