



Australian Government
Geoscience Australia



Australia's SBAS Program



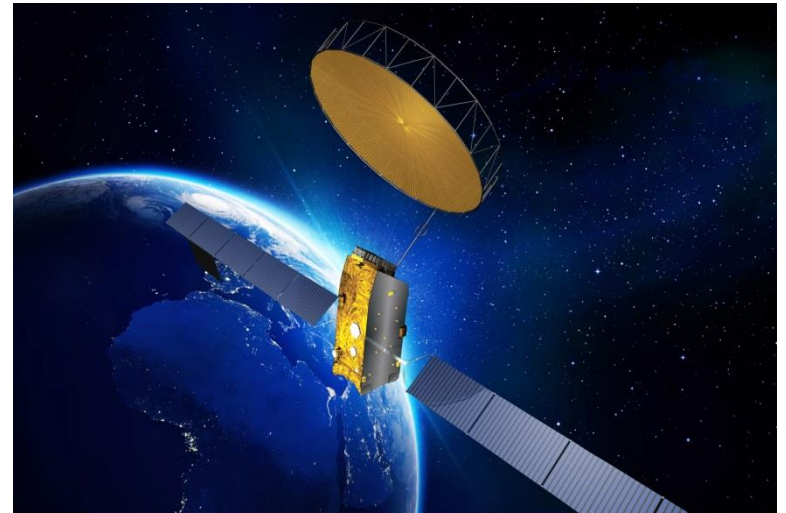
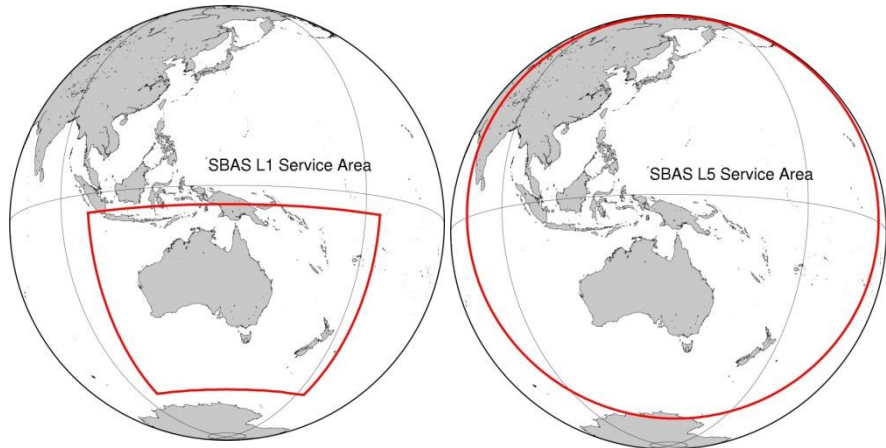
Background

- Investment in SBAS discussed in Australia over last decade+
 - Investment case based solely on benefits to aviation was considered weak
- In 2016, Geoscience Australia, the agency responsible for national PNT coordination, renewed advocacy for SBAS investment as a multi-industry capability
- In 2016, Australian Government funds 2-year test-bed
 - February 2017 to January 2019
 - Lockheed Martin, GMV, Inmarsat technology partners
 - New Zealand Government joins program

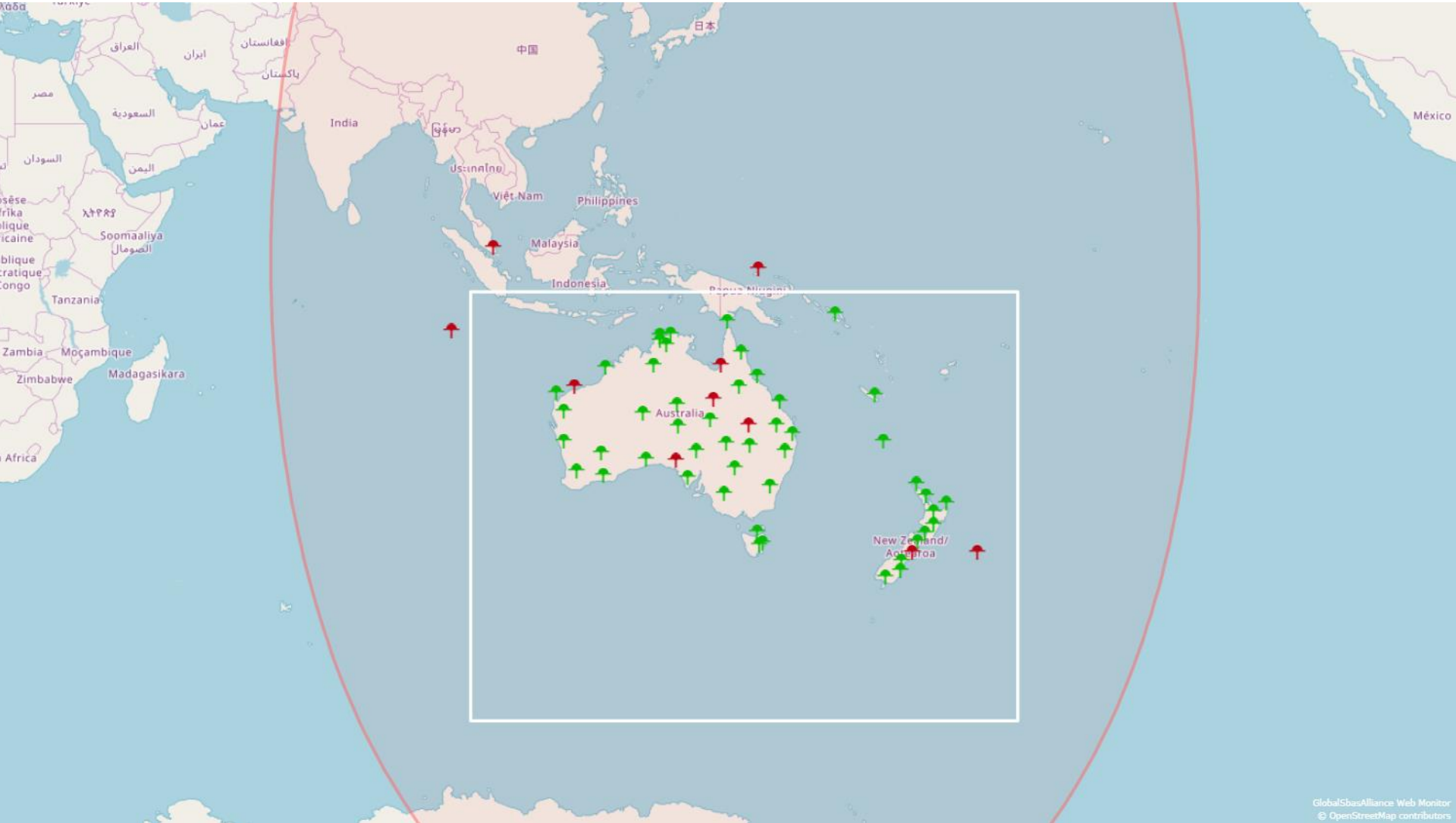
SBAS Test-bed Objectives

- Provide industry an opportunity to test SBAS in their businesses
- Build Australian SBAS expertise
- Develop an economic benefits analysis across industry
 - Report for public release in Q1 2019
 - National benefit from free and open PPP
- Encourage government investment in SBAS

SBAS Test-bed



SBAS Test-bed: CORS Infrastructure



GlobalSbasAlliance Web Monitor
© OpenStreetMap contributors

SBAS Test-bed



- PRN 122
- RTCA DO-229D standard

- GMV proprietary solution
- GPS PPP corrections on L1
- GPS/Galileo PPP corrections on L5

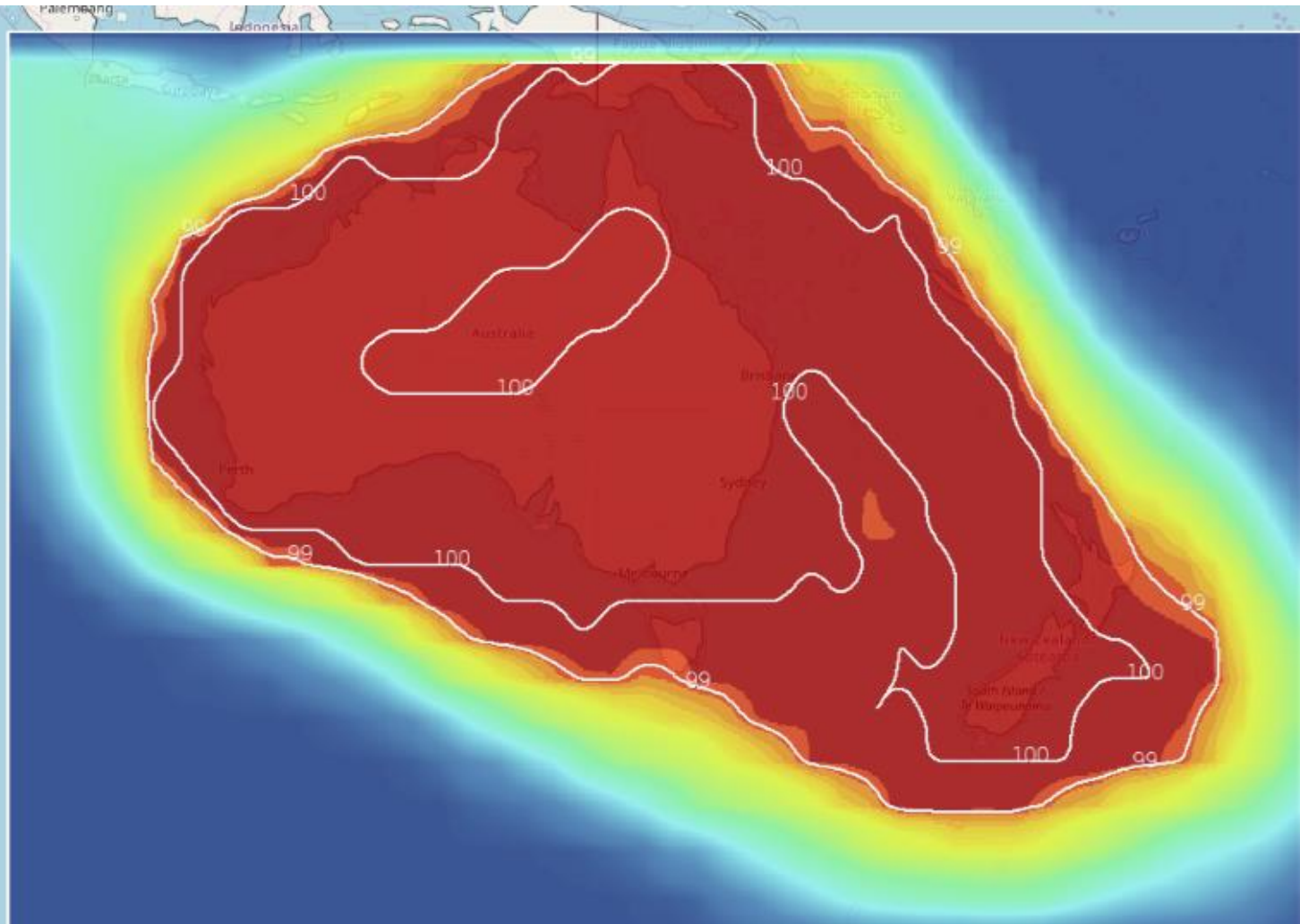
- PRN 122
- WG62 GAL GPS SBAS MOPS v0.3.8_10 Mar 2017

SBAS Industry Testing

- 10 industry sectors:
 - Road, rail, aviation, maritime, agriculture, mining, construction, spatial, consumer, utilities
 - 28 projects, 100+ organisations



SBAS Test-bed: Daily LPV200 Availability



SBAS Test-bed Performance



Kinematic Platform 15-hour Segment

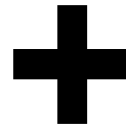
Solution	Horizontal RMS (m)	Vertical RMS (m)
SBAS	0.40	0.50
PPP	0.05	0.10

2018-19 Australian Federal Budget

- Following success of SBAS Test-bed
- May 2018 - funding allocation for better satellite positioning
 - Satellite-Based Augmentation System (SBAS)
 - National Positioning Infrastructure
 - Ongoing operational funding (15+ years)

Positioning: Australia's Approach

Integrated national positioning system



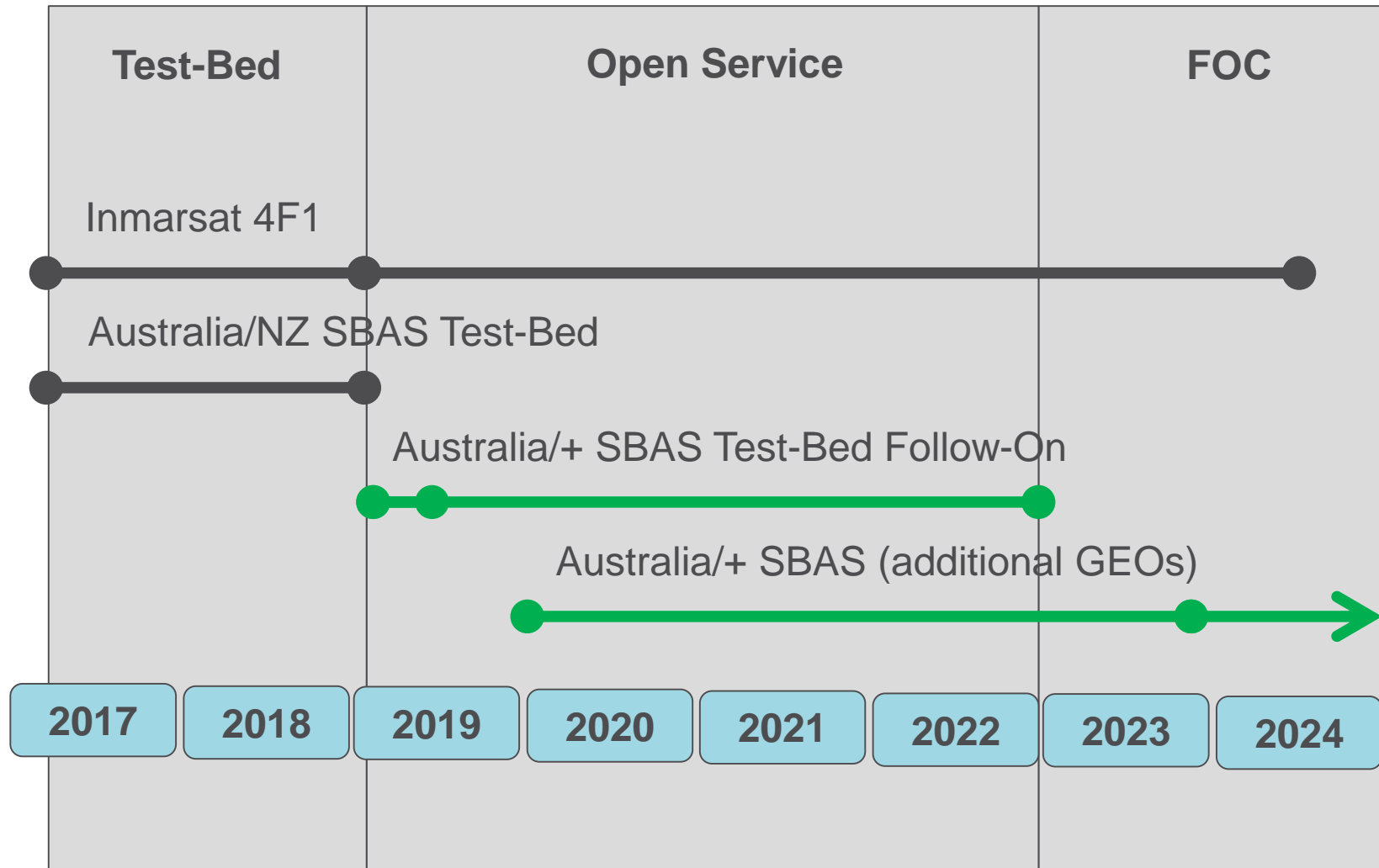
L1 GPS SBAS (aviation)
DFMC SBAS open service
Open access PPP (10cm)

High reliability core network
Open CORS data
Open source software

SBAS Program Governance

- Aviation Regulator: CASA
- Air navigation service provider: Airservices Australia
- SBAS System Supplier/Operator: Geoscience Australia

SBAS Progress and Plans



International Cooperation on GNSS

- **US:** US-Australia space dialogue November 2018
- **Japan:** QZSS agreement further MOU in preparation
- **India:** laser ranging tracking agreement in place
- **China:** Wuhan University ground station operation
- **Russia:** Ground station agreement in discussions

International Cooperation on GNSS

- **New Zealand:** GNSS cooperation
- **Pacific Islands:** GNSS infrastructure in 13 nations
- **Asia Pacific:** 35 countries participate APREF (UN-GGIM)

- **SBAS IWG:** Australia to host next meeting in 2019

International Committee on GNSS

- Australia's SBAS Program: active and continuing
- Services provided continuously since June 2017
- Australia active international collaborator on GNSS and strong support multi-lateral engagement

- **Australia seeks the status of an ICG Service Provider (i.e. regional augmentation provider)**

More Information



<http://www.ga.gov.au/sbas>