



Planning of the Continuous VLBI Campaign 2017 (CONT17)

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Introduction

The **Continuous VLBI Campaign 2017 (CONT17)** will be a continuation of the series of very successful continuous VLBI campaigns that were observed at irregular intervals since 1994. The most recent CONT campaigns were observed in roughly three-year intervals: CONT17 will be observed from 0 UT on November 28 to 24 UT on December 12 of 2017:

December 2017

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31					November 2017	January 2018

The main features of CONT17 can be summarized as follows:

- continuous VLBI: 15 consecutive days with 3 minutes between days for schedule changes
- UT-day observing: days running from 0 UT to 24 UT
- two legacy S/X networks to probe the accuracy of the VLBI estimates of the EOP and to investigate possible network biases
- one VGOS broadband demonstration network to be observed for about a third of the CONT17 period (e.g., five days from December 4 to December 8) as an initial indication of VGOS capabilities
- no optimal coverage in Africa and South America
- rapid turnaround sessions: the equivalents of the R1 and R4 sessions will be shipped/e-transferred and processed rapidly (using the data of the Legacy-1 network)

Networks and Correlation

The main focus of CONT17 remains on the legacy S/X system. The VGOS broadband observing is mostly done for demonstration purposes.

The three networks will be correlated at three different correlators:

Network	#stations	Data rate	Correlator	Comment
Legacy-1	13	512 Mbps	Bonn	—
Legacy-2	13	256 Mbps	Socorro	VLBA
VGOS-Demo	8	8 Gbps	Haystack	—

The VLBA correlator at Socorro, NM anticipates a very fast turnaround with correlation results available by mid-to-end January. Bonn and Haystack expect the correlation work to last significantly longer. It can take from a few months up to about half-a-year.

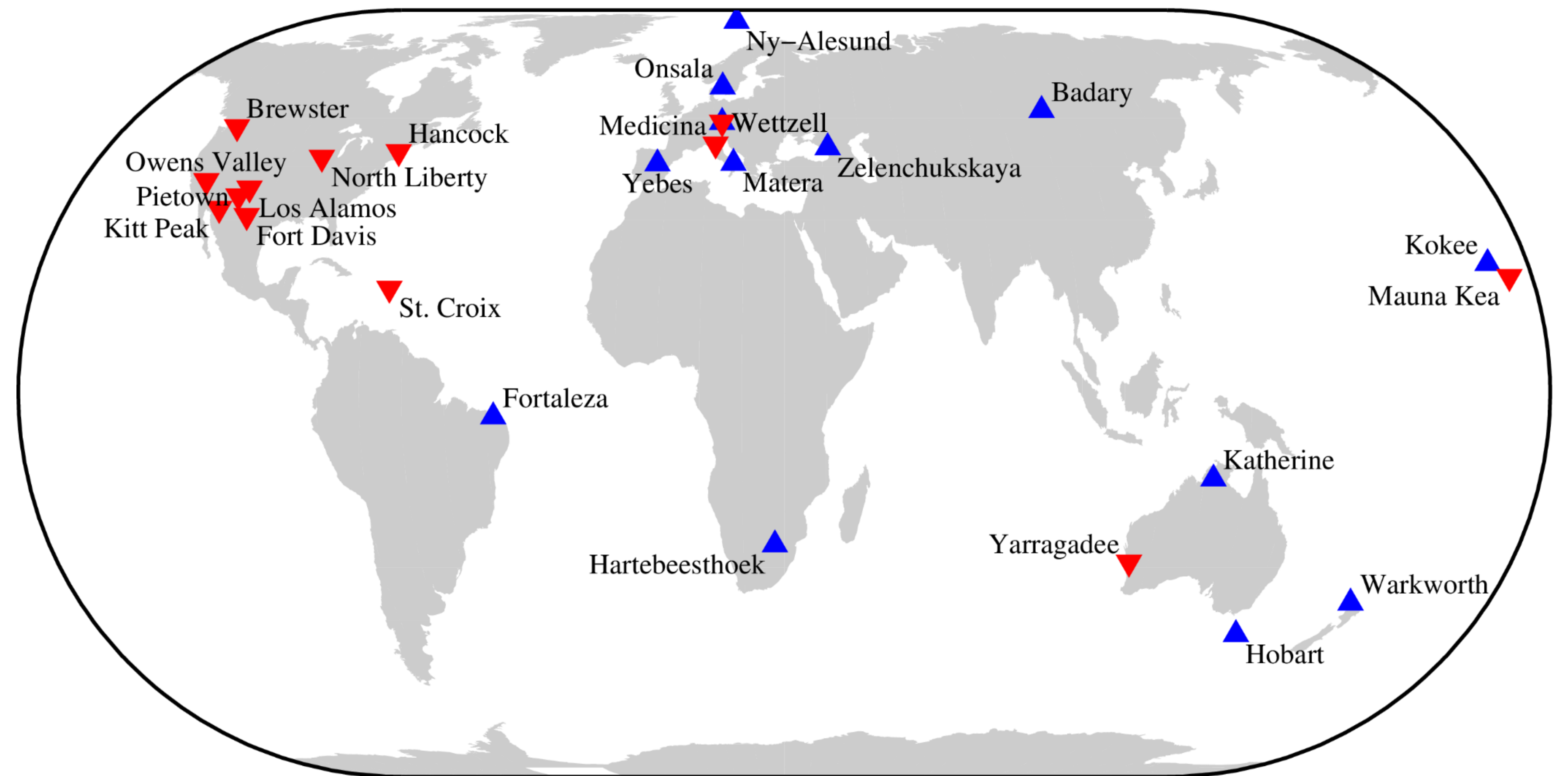
To reduce the work load on Bonn and Haystack stemming from the regular IVS observing program prior to and after the CONT17 campaign, the Washington correlator will take on a part of their correlation load.

While the stations of the Legacy-1 network are expected to mostly e-transfer their data to Bonn, the Legacy-2 stations will have to ship their recording modules physically to the VLBA correlator.

Observing Networks

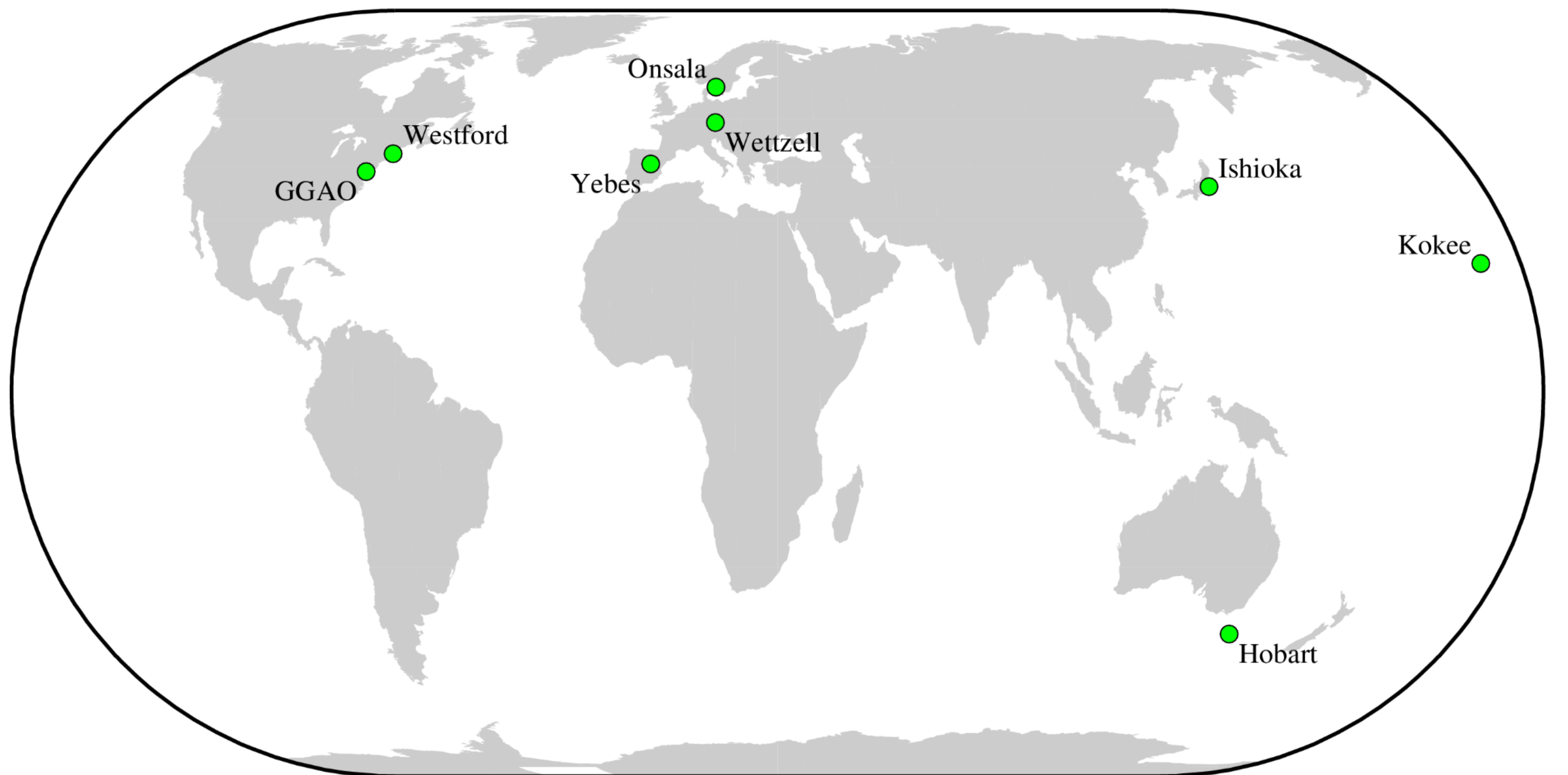
There will be 28 VLBI sites participating in the campaign. As Wettzell will observe with two legacy antennas and one VGOS antenna (triple point) as well as Kokee, Onsala and Yebees with both one legacy and one VGOS antenna, the overall number of stations participating in CONT17 will be 33.

Two legacy S/X networks (Legacy-1 and Legacy-2) of 26 stations at 25 sites:



- ▼ Legacy S/X network of ten VLBA stations plus three geodetic IVS stations
- ▲ Legacy S/X network of thirteen geodetic IVS stations

VGOS demonstration network (VGOS-Demo) of eight stations at eight sites:



- VGOS broadband network of up to eight VGOS stations

Simulation Results: EOP Formal Errors

A covariance analysis without velocity estimation resulted in the following EOP formal errors:

Network	X-pole	Y-pole	UT1	PSI	EPS
Legacy-1	13.0	13.7	0.9	36.0	13.1
Legacy-2	15.0	17.5	0.8	37.6	14.3
VGOS-Demo	22.1	22.5	0.8	43.2	18.1

The actuals for the EOP formal errors of the 13-station CONT11 campaign are at about: X-pole (12.9 μ s), Y-pole (13.1 μ s), UT1 (0.7 μ s), PSI (33.5 μ s), EPS (13.8 μ s).

Future Work

The next steps in the preparation of CONT17 include:

- determination of the media requirements
- request of additional media purchases, if necessary
- check-out of recording modes at all stations
- determination of station check times and assignment of appropriate Intensive slots
- preparation of final observing schedules

More information about CONT17 will be made available on the IVS Web site at the URL:

<http://ivscc.gsfc.nasa.gov/program/cont17/>