

**Westerbork VLBI station report for the EVN TOG Meeting,
Zoom meeting, Nov 24, 2020**

Overview:

Westerbork is contributing to VLBI projects with a single dish, equipped with a modified MFFE providing circular polarization and a DBBC backend. Two radio telescopes are available for VLBI operations, one equipped with the MFFE receiver, and the other with the 5cm receiver, currently sharing the DBBC/Mark5B/FlexBuff backend.

The remaining 12 radio telescopes of the WSRT are equipped with the APERTIF receivers and backends.

DBBC:

Our DBBC (used operationally since Session 2015-3), has four Core2 boards and eight BBC's and an internal Fila10G card and its running on Windows 7 and firmware version 1.07.

The WSRT DBBC is capable of delivering 2Gbps setups to a FlexBuff (though the relatively narrow MFFE IF, limits the data rate to >~1Gbps).

FlexBuff:

WSRT's FlexBuff server is equipped with 36 8TB disks (nominal capacity 244TB).

Fieldsystem:

Fieldsystem version 9.13.2.

Hydrogen Maser

We have ordered a new Hydrogen Maser, since the old Hydrogen Maser has been running for 25+ years now and its electronics components are degrading.

Session Participation:

Westerbork participated in the X, M, C and L-band experiments of sessions 2020-1, 2020-2, 2020-3 (with marginal loss of data)

EVN 2020-1

```
-----  
18/21 cm(L)      total: 44 hr    lost: 0 hr  
5      cm(M)      total: 43 hr    lost: 0 hr  
6      cm(C)      total: 73.5 hr  lost: 0 hr  
3.6/13 cm(X/S)   total: 38 hr    lost: 0 hr  
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Total:                198.5 hr          0 hr  
Total 0.00% lost
```

EVN 2020-2

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18/21 cm(L)      total: 55.5 hr  lost: 22.5 hr  
5      cm(M)      total: 31 hr    lost: 0 hr  
6      cm(C)      total: 73.5 hr  lost: 8 hr  
3.6/13 cm(X/S)   total: 27 hr    lost: 0 hr  
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Total:                187 hr          30.5 hr  
Total 16.31% lost
```

EVN 2020-3

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-----  
18/21 cm(L)      total: 105 hr   lost: 0 hr  
5      cm(M)      total: 39 hr    lost: 3 hr  
6      cm(C)      total: 27 hr    lost: 0 hr  
3.6/13 cm(X/S)   total: 27 hr    lost: 0 hr  
-----  
Total:                198 hr          3.0 hr  
Total 1.52% lost
```

Operational problems during recent sessions:

EVN 2020-1

Problem 1: During the 5cm fringe test (N20M1) there was no fringe for the first source. Probably this source is too weak for Westerbork. Second source was a strong source that produced a nice fringe.

Problem 2: No fringe during the 13cm fringe test (N20SX1). 13cm has a different mixing scheme in the receiver and because of that the IF band is reversed. It is not easy to fix this because this would require patching inside the receiver and changing our LO setup.

EVN 2020-2

Problem 1: During the second half of the VLBI session the Rubidium broke, the replacement Rubidium also broke. This resulted in the offset between MASER and GPS being completely wrong. This affected four observations. We hope Jive can correct our MASER/GPS offset since the MASER was still stable and they have our offset history.

EVN 2020-3

Problem 1: No fringes in the 5cm fringe test. Probably the signal of the 5cm receiver is too low. We will look at this when the receiver is on the lab. Counted the fringe test as lost hours, if the signal was also too low during the science observations has to show during correlation.

Problem 2: Fringe data was not uploaded during the first fringe test. The program autoftp failed because jive5ab was started incorrectly after the flexbuff upgrade. After a restart of jive5ab everything went fine.

Problem 3: During the 6cm fringe test our signal looked linear. Probably a broken power supply of an LNA. This will be replaced when there is time.

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