TRAPPIST comets production rates: C/2022 E3 (ZTF), C/2022 A2 (PANSTARRS), C/2022 U2 (ATLAS), C/2020 V2 (ZTF), C/2021 Y1 (ATLAS), 118P, 81P, and 73P/SW-3

ATel #15822; ***E. Jehin, M. Vander Donckt, J. Manfroid, S. Hmiddouch, Y. Moulane (STAR Institute, University of Liege) and A. Jabiri, Z. Benkhaldoun (Oukaimeden Observatory)***
*on **23 Dec 2022; 09:05 UT***
Credential Certification: Emmanuel Jehin (ejehin@uliege.be)

Subjects: Optical, Comet

The authors report that they obtained from TRAPPIST-South and TRAPPIST-North robotic telescopes (Jehin et al. 2011) recent observations using cometary HB narrowband filters (Farnham et al. 2000) for the following comets and computed preliminary production rates at 10.000 km using a Haser Model (Vp=Vd=1km/s) (Haser 1957). The dust production rates proxy A(0)f(rho) were estimated by profile fitting at 10.000 km (A'Hearn et al. 1984) and corrected for the phase angle (Schleicher 2007).

C/2022 E3 (ZTF)
Date UT=2022-12-19, rh=1.18 au, Delta=1.34 au, DT=-25.0 days
Q(OH) = 3.51 +/- 2.03 E28 s-1
Q(CN) = 6.01 +/- 0.91 E25 s-1
Q(C2) = 8.95 +/- 1.62 E25 s-1
Q(C3) = 1.69 +/- 0.30 E25 s-1
A(0)fp(BC) = 3368+/-8 cm
A(0)fp(RC) = 4902+/-85 cm

C/2022 A2 (PANSTARRS)
Date UT=2022-12-21, rh=1.89 au, Delta=1.82 au, DT=-60.0 days
Q(OH) = 3.26 +/- 1.90 E28 s-1
Q(CN) = 1.29 +/- 0.19 E26 s-1
Q(C2) = 1.25 +/- 0.25 E26 s-1
Q(C3) = 3.21 +/- 0.47 E25 s-1
A(0)fp(BC) = 3173+/-367 cm
A(0)fp(RC) = 4044+/-3391 cm

C/2022 U2 (ATLAS)
Date UT=2022-12-18, rh=1.38 au, Delta=0.86 au, DT=-28.0 days
Q(OH) = 2.52 +/- 1.63 E27 s-1
Q(CN) = 5.83 +/- 0.85 E24 s-1
Q(C2) = 7.25 +/- 0.98 E24 s-1

Q(C3) = 1.90 +/- 0.23 E24 s-1
A(0)fp(BC) = 28+/-17 cm
A(0)fp(RC) = 29+/-24 cm

C/2020 V2 (ZTF)
Date UT=2022-12-15, rh=2.76 au, Delta=2.18 au, DT=-145.0 days
Q(OH) = 2.90 +/- 1.87 E28 s-1
Q(CN) = 1.67 +/- 0.33 E26 s-1
Q(C2) = 1.21 +/- 0.60 E26 s-1
Q(C3) = 3.56 +/- 1.30 E25 s-1
A(0)fp(BC) = 7833+/-1234 cm
A(0)fp(RC) = 9089+/-1553 cm

C/2021 Y1 (ATLAS)
Date UT=2022-12-19, rh=2.56 au, Delta=1.7 au, DT=-133.0 days
Q(OH) < 4.40 E27 s-1
Q(CN) = 1.30 +/- 0.24 E25 s-1
Q(C2) = 9.97 +/- 4.36 E24 s-1
A(0)fp(BC) = 392+/-14 cm
A(0)fp(R) = 470+/-15 cm

118P/Shoemaker-Levy 4
Date UT=2022-12-20, rh=1.84 au, Delta=1.0 au, DT=+25.0 days
Q(OH) = 1.58 +/- 1.23 E27 s-1
Q(CN) = 5.70 +/- 0.91 E24 s-1
Q(C2) = 4.51 +/- 1.05 E24 s-1
A(0)fp(BC) = 98+/-17 cm
A(0)fp(RC) = 101+/-94 cm

81P/Wild 2
Date UT=2022-12-21, rh=1.6 au, Delta=1.9 au, DT=+5.0 days
Q(CN) = 2.33 +/- 0.39 E25 s-1
Q(C2) = 1.65 +/- 0.51 E25 s-1
A(0)fp(BC) = 927+/-69 cm
A(0)fp(RC) = 1382+/-744 cm

73P/Schwassmann-Wachmann 3
Date UT=2022-12-20, rh=1.8 au, Delta=1.92 au, DT=+116.0 days
Q(OH) < 17.20 E26 s-1
Q(CN) = 4.14 +/- 0.69 E24 s-1
Q(C2) = 1.14 +/- 0.91 E24 s-1
A(0)fp(BC) = 164+/-15 cm
A(0)fp(R) = 205+/-14 cm

Notations: rh= heliocentric distance (in au), Delta=geocentric distance (in au), DT= Time to perihelion. OH, NH, C3, CN, C2 are the HB gaseous narrowband filters for the corresponding species, and BC, GC, RC are the blue, green and red dust continuum filters (Farnham et al. 2000).

Acknowledgments: TRAPPIST is a project funded by the Belgian F.R.S.-FNRS under grant PDR T.0120.21. Observations were carried on from the ESO La Silla Paranal and Oukaimeden Observatory. We thank NASA, David Schleicher and the Lowell Observatory for the loan of the HB comet filters. https://www.trappist.uliege.be/