

RECENT OBSERVATIONS OF THE OH 18-cm LINES IN COMETS WITH THE NANÇAY RADIO TELESCOPE. Jacques Crovisier, Pierre Colom, Nicolas Biver and Dominique Bockelée-Morvan. LESIA, Observatoire de Paris, 5 place Jules Janssen, F-92190 Meudon, France (jacques.crovisier@obspm.fr, pierre.colom@obspm.fr, nicolas.biver@obspm.fr, dominique.bockelee@obspm.fr).

The OH 18-cm lines are systematically observed in comets with the Nançay radio telescope since 1973. These observations allow us to evaluate the cometary water production rates and their evolution with time, and to study several physical processes such as the excitation mechanisms of the OH radio lines, the expansion of cometary atmospheres, their anisotropy in relation with non-gravitational forces, the Zeeman effect in relation to the cometary magnetic field.

Between 1973 and 1999, 52 comets have been successfully observed at Nançay [1]. The radio telescope has been upgraded in 2000, and observations are now made with a sensitivity increased by about a factor of two [2, 3]. As of beginning of 2008, the returns of 38 comets were observed at Nançay with the refurbished instrument [4]. The observations are organized in a data base; the part from 1982 to 2002 is publicly available (<http://www.lesia.obspm.fr/planeto/cometes/basecom/>). New analyses of the OH line shapes in terms of coma expansion velocity [5] and of the correlation between visual magnitudes and OH production rates [6] have been performed.

Among the last comets observed at Nançay are 9P/Tempel 1 prior to its visit by *Deep Impact* [7], the two main fragments of 73P/Schwassmann-Wachmann 3 during their passage close to the Earth in 2006 [8], 17P/Holmes just after its outburst in October 2007 (Fig. 1, [9]), and 8P/Tuttle in winter 2007–2008, also during its close approach to the Earth (Fig. 2).

References

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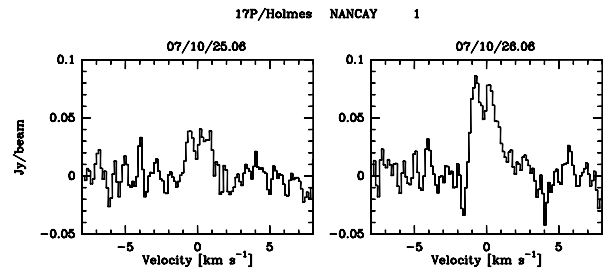


Figure 1: The OH spectra of comet 17P/Holmes observed at Nançay just after its outburst on October 24.2.

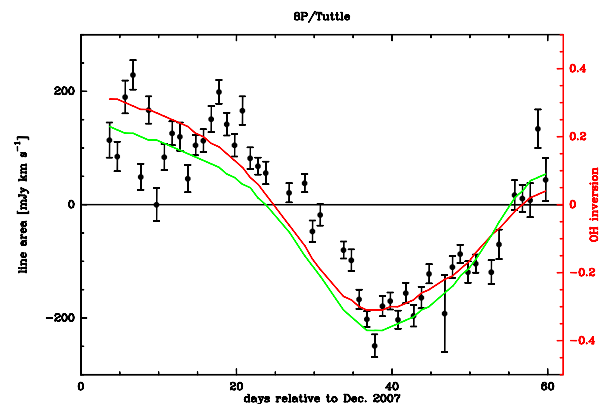


Figure 2: The observed OH line area in 8P/Tuttle as a function of time, in comparison with the expected OH maser inversion from the models of Despois *et al.* (in red) and of Schleicher & A'Hearn (in green).