Coma Structure Reveals How Prebiotic Molecules are Stored in Comets



- The distribution of prebiotic molecules • in the comae of comets can be revealed with infrared spectroscopy. We have developed a technique to infer how molecules are stored in the nucleus based on their coma distributions.
- Molecules in comet C/2014 Q2 Lovejoy • showed 4 distinct release mechanisms:

Group 1: Associated volatiles released principally from nucleus ices

Group 2: CO – released from nucleus ice segregated from other volatiles

Group 3: H_2O – released from the nucleus both as an ice and gas

Group 4: Volatile products from the breakdown of more complex molecules within dust grains

C/2014 Q2 Lovejoy



Credit: Michael Jaeger

(APL)