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Delivering and retaining volatile elements during the birth of planets

Volatile elements and species, including water, are depleted in Earth, Mars, the Moon and the asteroid Vesta compared with the chondritic feedstocks that are thought to have formed these planetary bodies. Models for delivery of volatile components, either during the main phase of planetary growth, or during late accretion, remain controversial, as are models for how volatile elements are lost during planet formation. This talk will outline the relationship between indicators of late accretion and volatile enrichment, to shed light on how volatile elements may have been delivered to planets. We will then explore examples from the Moon and from the Trinity nuclear test on Earth to understand how volatile elements are retained – or lost – during planetary evolution.