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Netherlands Planetary Science Network on Observables of Planetary Habitability

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Planetary habitability is driven by interior, surface, and external processes shaping the planet in concerto. To understand planetary habitability in our solar system, it is crucial to compare these planetary processes between its planets and moons and Earth, the only planet we know is habitable. The majority of our insights in solar system bodies is gained through planetary exploration, which in turn is also the way forward to grow our understanding. Through a new Planetary Science Network in the Netherlands, we are going to build on existing solar system expertise in the Netherlands to establish a framework to develop a set of key observables that enable in situ or remote detection of planetary habitability. To develop these observables, we have identified three main themes, planetary interiors, with Ganymede as a case study, surface morphology, focussing on landforms and using Mars as a case study, and surface composition, comparing Earth's oldest and icy surfaces with Mars and icy moons. Through a synergetic approach within the network, the outcomes of the three themes will provide both observables for the case studies and fundamental observables that can be applied to our solar system and the plethora of known exoplanet systems. The main outcomes of the network will lead to further strengthening the position of the Dutch planetary science community and active contributions to instruments for future solar system exploration missions. It will also result in closer collaborations with the strong Dutch exoplanetary science community, aiming to bridge the gap between what should be observed and what can be observed. With our presentation, we would like to introduce our network and research goals to the international community, share ideas and find connections.