

July 16-21, 2017 at UC San Diego, CA, USA

Exoplanet Habitability and Biosignature Detection

F. Tian¹

¹ Department of Earth System Science, Tsinghua University

* tianfengco@tsinghua.edu.cn

~20 years after the discovery of the first exoplanet, scientists are observing exoplanets which might be similar to the Earth. This effort could potentially answer the long standing question: **Are we alone in the Universe?**

Exciting developments in the past one year include the discovery of an Earth-size planet orbiting around the nearest star, Proxima, and that of several Earth-size planets in the liquid water habitable zone (HZ) of a cool dwarf, Trappist-1. Several space- and ground-based projects aim at discovering all Earth-size planets in the HZ of bright M dwarfs within the solar neighborhood. It can be expected that many more so called potentially habitable planets (PHZ) will follow.

With the expected rapid pace of discoveries, it will be useful to systematically exam the requirements for a planet to be defined 'habitable'. And it will be wise to examine the habitability of planets from an evolution point of view. Moreover, it will be useful to discuss with possible signs of life on exoplanets with stellar context and evolutionary perspective. In this talk the most recent developments on planetary habitability and biosignature detections will be discussed.