Physics Seminar – 2020/07/31
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PLACE: Webex

ABSTRACT:
How much solar radiation the earth absorbs depends on the reflective properties of the specified surface, snow and ice are two surfaces on earth that have been shown to have high albedos due to their high reflective properties. To date, albedo schemes are limited to highly simplistic parameterizations only appropriate for simplistic climate models and to high complexity (general circulation) models, and computationally expensive options that require several time-steps, and a high spatial and temporal resolution. In order to sustain such standards the schemes ,in turn ,demand great computational power, but very expensive options; thus making their usage limited. Earth system models of intermediate complexity (EMICs) aim to be as accurate as general circulation models over long time periods with less computational power. They are the bridge between the simple climate models and the computationally expensive general circulation models.

For albedo there is as of yet, no appropriate well-tested representation in EMICs. The objective of this thesis was to develop, and test a 'new' parametrization scheme for Earth's seasonal surface albedo; for all terrestrial ice, seasonal snow, and marine ice surfaces. Key variables (temperature, snow depth and time), were determined using theoretical models and data to guide the development of the parametrization, as well as testing the parametrization results. However, as data was limited, only allowing to test a few simple schemes: linear-albedo, linear-albedo VIS/NIR , and polynomial albedo; by adjusting the polynomial scheme to consider VIS and NIR bands, the results concluded that the polynomial scheme that considers band albedos was the most successful model achieved to find an intermediate scheme; however, the objective was not completed, because the intermediate scheme was not well-tested.

ALL ARE WELCOME!!!