The boreal summer intraseasonal oscillation: A review

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The author is asked to write a review article on the boreal summer intraseasonal oscillation (BSISO) in J. Meteor. Soc Japan and this talk will present some of the materials in an attempt to give an overview of the BSISO. The BSISO is the most pronounced subseasonal variability in the tropics during boreal summer. It is characterized by 30-60 day periodicity and is believed to be a modified form of the Madden-Julian oscillation (MJO) that are most pronounced during boreal winter. They exhibit prominent eastward propagation of convection along the equator over the Indo-Pacific warm pool. Through the interaction with the Asian summer monsoon, the BSISO, however, displays more complicated propagation features. The BSISO convection displays northward propagation over the northern Indian Ocean and western North Pacific as well as the eastward propagation, giving rise to an elongated northwest-southeast rain band that characterizes it. The BSISO has a profound influence on a variety of weather and climate systems in the Asian monsoon region. For example, the BSISO strongly modulates the activity of low-pressure systems, tropical cyclones, quasi-biweekly oscillation, among others. As a result, important atmospheric phenomena such as active and break spells of monsoon precipitation are strongly influenced by the BSISO. So far several hypotheses have been proposed to account for the complicated behavior of the BSISO and our understanding has steadily improved, yet current general circulation models still have difficulty simulating it with fidelity and the prediction skill remains accordingly insufficient. In the future, much more efforts should be devoted to improve our understanding of the interaction processes of the BSISO and a variety of space-time scales.