



## **The role of Eurasian snow cover in blocking variability**

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This study examines the inter-seasonal relationship between NH snow cover and regional atmospheric blocking for a 31-year period (1972-2002). It is found that snow cover anomalies modulate and respond to regional blocking activity in certain sectors and seasons.

Persistent blocking patterns over the Atlantic sector acts as a controlling mechanism of Eurasian snow cover. Simultaneously, it is found that Eurasian snow cover anomalies can modulate regional blocking activity, especially over the West Pacific sector, where atmospheric blocking is sensitive to snow cover fluctuations occurring over western Eurasia.

These interactions describe a seasonal cycle of teleconnections from winter to summer. A detailed inspection at shorter time scales reveals that these inter-seasonal linkages seem to occur through a sequence of teleconnections involving different timings and regional snow covered regions, depending on the climatological evolution of snow extent. According to that, an enhanced Atlantic blocking activity in winter favors a later spring snow disappearance through an enhanced cold advection towards western Eurasia. The resulting snow cover anomalies partially force an opposite-sign blocking response over west and central Pacific which is sustained through spring and early summer, presumably due to the persistence of snow cover anomalies.