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Soil Moisture Changes in the Russian Federation: In Situ Data

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Soil moisture observations in the USSR began the middle of 1950s. At the peak of the network extent (in the middle of 1980s) more than 2000 stations performed these observations operated over Russia. Since that time the number of stations in this network was significantly reduced, especially at soil plots with natural vegetation. Therefore, in this study soil moisture changes over Russia during 1970-2000 (2001) are presented using the data of only 120 long-term stations. For the European part of Russia, it is concluded that: (1) Soil moisture changes within the upper 0-10 and 0-20 cm have no systematic component. Only when the thicker layers (starting with the upper 50 cm) are used, systematic changes (trends) can be found. That is why soil moisture of the upper 20 cm layer cannot be considered as characteristic of a moistening regime of the active soil layer. (2) Over most of non-boreal European Russia, soil moisture increase is observed for layers 0-50 and 0-100 cm both in spring and during the summer (i.e., during the entire growing period). Moreover, trends in soil moisture for the upper meter of soil (layer 0-100 cm) are more apparent when compared to those in layer 0-50 cm. (3) Only in the zone of mixed and broad-leaved forest, areas of decreasing levels of soil moisture are observed during the entire growing period. For the Asian part of Russia (Southern Siberia and the southern part of Russian Far East) soil moisture changes within the upper 0-10 and 0-20 cm have no systematic component too. Changes in soil moisture within the thicker layers (the upper 50 cm and the upper 1 m) are currently under scrutiny and results of their analysis will be presented at the Session.