

**Abstract:**

The diploma thesis deals with river runoff, mostly groundwater runoff/ base flow in crystalline and flysh zones of the Bohemian Massif and the West Carpathians, resp., in the Czech Republic. These environments are characterized by similar hydrogeological conditions, typical of hardrock environment: presence of a weathered and fractured zones forming anear-surface aquifer of relatively low transmissivity, reaching maximum thickness of up to tens of meters. The Kille's method, that permits determining long-term characteristics, was used for the groundwater runoff assessment. The runoff in selected mountainous catchments was compared: 29 catchments in different crystalline areas (Sumava, Krkonose, Orlicke hory, Jeseniky) and 20 catchemnts in flysh zone of Carpathian (Beskydy). It has been proven, that parts of flysh zone, built by Cretaceous and Tertiary sediments, differ in runoff. Groundwater runoff in the Tertiary flysh zone is lower than in crystalline areas, but Cretaceous flysh does not differ from crystalline areas.. These differences are supported by soil composition: in Tertiary flysh soils contain more fine-grained components, whereas in crystalline zones and in Createcous flysh heavy middle soils occur scarcely and lighter soils prevailr. Groundwater runoff in Tertiary flysh differs from crystalline areas: it is more variable, runoff (base flow) in dry periods is lower and, on the contrary, in humid periods considerably higher. Flysh zones therefore display lower retention capability than crystalline ones. Groundwater runoff in Tertiary flysh zone less depends upon precipitation, therefore under higher precipitation surface runoff increasesunlike groundwater runoff. The total annual percipitation is significantly affected by the orientation of a catchment with regard to dominant wind. Due to dominant wind direction in the Czech republic from NW to SE, the catchments exposed to NW have higher precipitation than catchments oriented to SE. This fact reflects on runoff relationships. In studied catchments the influence of neither the slope of the land surface nor the density of stream network on groundwater runoff were proved. These conclusion are

important for the estimation of groundwater recharge and thus natural groundwater resources in relevant areas/zones. Different retention ability of flysh and crystalline zones are important for considerations of possible mitigation effect of floods.