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Climate change and its effect on agriculture, wa resources and human health sectors in Poland

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Abstract. Multi-model ensemble climate projections in the ENSEMBL Project of the EU allowed the authors to quantify selected extreme weather indices for Poland, of importance to climate impacts on sy and sectors. Among indices were: number of days in a year with hi of the heat index; with high maximum and minimum temperatures; of vegetation period; and number of consecutive dry days. Agricult hydrological, and human health indices were applied to evaluate th changing risk of weather extremes in Poland in three sectors. To a this, model-based simulations were compared for two time horizor century apart, i.e., 1961–1990 and 2061–2090. Climate changes, a particular increases in temperature and changes in rainfall, have st impacts on agriculture via weather extremes – droughts and heat. The crop yield depends particularly on water availability in the plar development phase. To estimate the changes in present and futur two crops important for Polish agriculture i.e., potatoes and wheat simple empirical models were used. For these crops, decrease of yi projected for most of the country, with national means of yield cha being: -2.175 t/ha for potatoes and -0.539 t/ha for wheat. Alread most of Poland, evapotranspiration exceeds precipitation during su hence the water storage (in surface water bodies, soil and ground decreases. Summer precipitation deficit is projected to increase considerably in the future. The additional water supplies (above precipitation) needed to use the agro-potential of the environmen increase by half. Analysis of water balance components (now and i projected future) can corroborate such conclusions. As regards clin health, a composite index, proposed in this paper, is a product of t number of senior discomfort days and the number of seniors (aged The value of this index is projected to increase over 8-fold during 1 years. This is an effect of both increase in the number of seniors (c twofold) and the number of senior-discomfort days (nearly fourfold

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