



Cloud distribution in climate models and climate sensitivity

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Vertical and horizontal distribution of cloudiness in 18 AR4 models is studied in connection with model climate sensitivity. Models with high sensitivity tend to have more cloudiness in midlatitudes and less clouds in tropics than models with low sensitivity. There is correlation between decreasing of cloudiness from midlatitudes to tropics in present climate and decreasing of cloudiness induced by doubling of CO₂. Model climate sensitivity seems to be correlated with the height of maximum of high cloudiness and the amount of PBL cloudiness. Models with high sensitivity have maximum of high cloudiness at 100-200 hPa, and the amount of PBL cloudiness is low. Models with low sensitivity have maximum of high cloudiness at 250-300 hPa, and the amount of PBL cloudiness in these models is high. Models with high sensitivity tend to have smaller relative humidity in tropics.