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On the evaporation/condensation dynamics of thin liquid films and sessile droplets PIERRE COLINET, ALEXEY REDNIKOV, SEVERINE ROSSOMME, Universite Libre de Bruxelles — Some classical lubrication-type models are examined further and applied to the study of thin liquid film evaporation and condensation on heated or cooled horizontal and flat homogeneous substrates. The focus is on particular solutions in the form of sessile droplets surrounded by an adsorbed (or precursor) film. Using a combination of analytical results and numerical simulations, particular attention is devoted to the apparent contact angles and their evolution when evaporation or condensation takes place. Different forms of the disjoining pressure isotherm are considered, allowing both partial and complete wetting situations to be studied. The influence of an inert component in the gas phase, in addition to vapor, is considered through a slightly modified form of the mathematical expression for the phase change rate. The role of thermocapillary flows in the vicinity of the contact lines receives particular attention, while the vapor recoil is showed to be negligible in general.

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