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Numerical study on sessile droplet evaporation CECILE LALANNE, JOSE-MARIA FULLANA, Sorbonne Universit, CNRS, UMR 7190, Institut Jean Le Rond dAlembert, Paris, France, FLORENCE LEQUIEN, Den-Service de la Corrosion et du Comportement des Matriaux dans leur Environnement (SCCME), CEA, Universit Paris-Saclay, F-91191 Gif-sur-Yvette, DPC-SCCME-LECNA TEAM, INSTITUT JEAN LE ROND D'ALEMBERT - FCIH TEAM — In marine atmosphere, sprayed droplets containing chloride particules are carried by the wind from the sea. Droplets deposit on the exposed surface and become saline sessile droplets. This creates an electrolyte of finite size that can react with the metallic surface, leading to atmospheric corrosion. In order to investigate the effect of evaporation on corrosion, we propose a numerical model on evap- oration dynamics of salty sessile drops, built with Basilisk, a free software. Because of the complexity of the problem, the model is being developed step by step. At first, we were interested in the evaporation of pure water sessile droplets deposited on non- corrodable substrat to understand the dynamics of evaporation on a simple case. The different flow mechanisms inside and outside the droplet were studied and compared with litterature and experi- mental observations. As a second step, we analyze the Marangoni flow due to the variation of surface tension along the drop interface, caused by the non-homogenenous salt concentration. At the end, we hope to be able to simulate the realistic salt deposit patterns after the complete drop evaporation to identify the potential sites of corrosion.

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