Solar wind control of the dynamic evolution of the Venus ionotail

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We investigate temporal variations of the Venus ionotail structure using a two-dimensional global hybrid simulation model of the solar wind interaction with the ionosphere of Venus. The model demonstrates dynamic evolution of the ionotail in which large-scale concave structures evolve with time preferentially at the side where the solar wind motional electric field points away from the ionotail. The model also predicts strong dependence of the evolution on the solar wind dynamic pressure. We will show that the momentum transfer between magnetosheath protons and pickup planetary ions as well as the asymmetrical transterminator transport of ionospheric ions plays an important role in producing the asymmetrical evolution of the ionotail.