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Formation of Outflow Channels on Mars: Testing the Origin of Reull Vallis in Hesperia Planum by Large-scale Lava-Ice Interactions and Top-down Melting

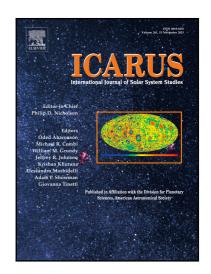
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Highlights.

- Ice sheet existence coincident with Late Noachian-Early Hesperian volcanism.
- Formation of Reull Vallis by ice sheet lava heating and loading is explored.
- Heating/loading causes significant melting, runoff, & deformation.
- Tested origin model offers advantages over previous formation models.
- Morphologic constraints are generally satisfied, though some uncertainties remain.

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