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Five years of observing the solar chromosphere with ALMA - First results and future opportunities

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Five years ago, regular observations of the Sun with the *Atacama Large Millimeter/sub-millimeter Array* (ALMA) started. Since then, an increasing number of data sets have been acquired. At the same time, the **Solar ALMA Pipeline (SoAP)** for processing these data sets has been improved substantially. As a result, the first version of the **Solar ALMA Science Archive (SALSA)** was constructed. The aim of SALSA, being the final product of the now concluding ERC-funded Solar ALMA project, is to **provide science-ready ALMA data to solar physicists**. The contained data is mostly comprised of high-cadence (1-2s) time series of millimetre continuum images for different receiver bands and solar targets. A particular advantage is that these ALMA maps provide direct measurements of (brightness) temperatures in different chromospheric layers that are complementary to other chromospheric diagnostics.

After a brief introduction to the opportunities and challenges connected to observing the Sun with ALMA, examples of SALSA data and first scientific results regarding, e.g., the imprint of magnetic fields, propagating shock waves, and oscillations are presented. Finally, the diagnostic potential for the Sun and other stars and the future development of ALMA's solar capabilities are discussed.

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