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Gaining Insight into Star Formation: Variations in Star Formation Efficiency KELLEY LIEBST, PAUL SCOWEN, Arizona State University — Until recently astronomers have used star formation laws to measure the star formation rate and efficiency of galaxies only on global scales because of the poor resolution of available data. We are now capable of producing spatially resolved maps of variations in star formation rate and efficiency that can provide direct insight into the physical processes that govern star formation and assess the short-term nature of bursts of star formation and the longer-term nature of larger-scale events that can dictate the global distribution of stars and the ultimate fate of a galaxy as a whole. It is this tracking of the stellar ecology that is vital for insight into the star formation process, but also to understand the conditions that can result in star and planet formation. We are using narrowband optical, infrared, neutral gas, and molecular gas data from a variety of sources to provide star formation rates and efficiencies on previously inaccessible small spatial scales across a suite of galaxies that represent a range of star formation environments and scales. We are using these data to relate the variations in star formation efficiency we observe to the known local physical conditions and the associated star formation histories for each locale within each galaxy.

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