 **Key points:** This paper assesses the habitability of two planets (Gl 581c and Gl 581d) discovered around the M-type star Gliese 581. It focuses on estimating the boundaries of the habitable zone (HZ) around this star and the uncertainties involved in their determination.

 **Important formulas or discoveries:** The study provides simplified formulae for estimating the inner (lin​) and outer (lout​) edges of the habitable zone based on stellar luminosity (L) and effective temperature (Teff​):

lin = (lin,0 - ain(Teff - 5700) - bin(Teff - 5700)^2) (L/Lsun)^(1/2)

lout = (lout,0 - aout(Teff - 5700) - bout(Teff - 5700)^2) (L/Lsun)^(1/2)

where lin,0​ and lout,0​ are the inner and outer HZ limits for the Sun, and ain​, bin​, aout​, and bout​ are constants.

 **Limitations:** The study acknowledges uncertainties in determining the HZ boundaries, particularly due to the effects of clouds and the unknown properties of exoplanet atmospheres. It also notes the challenge of assessing the habitability of Gl 581c and Gl 581d due to limited information about their atmospheric properties and potential for liquid water.

 **Summary:** The paper concludes that Gl 581c is unlikely to be habitable due to its high stellar flux, while Gl 581d, with conditions comparable to early Mars, might be potentially habitable. It emphasizes the need for further research and observations to confirm the habitability of Gl 581d and to better understand the factors influencing habitability around M-type stars.