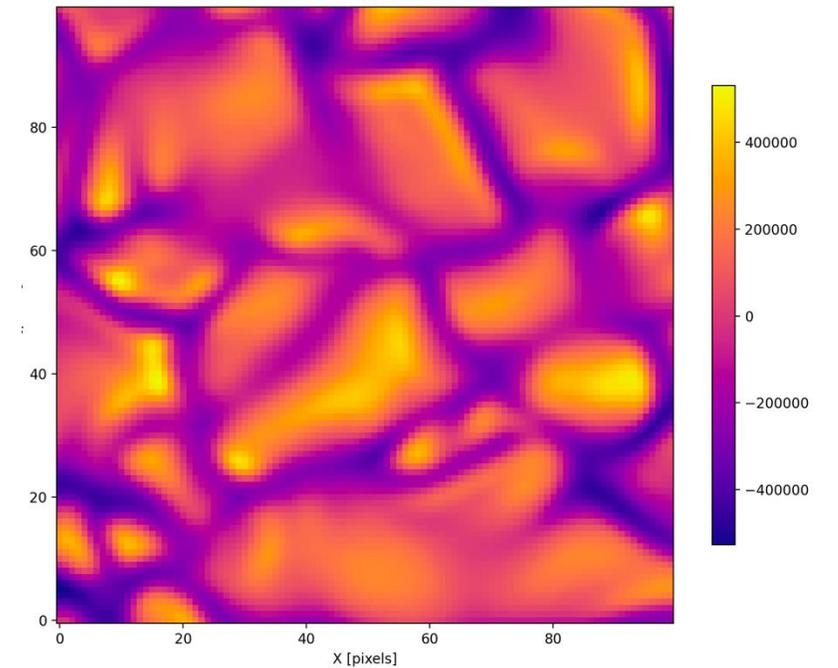
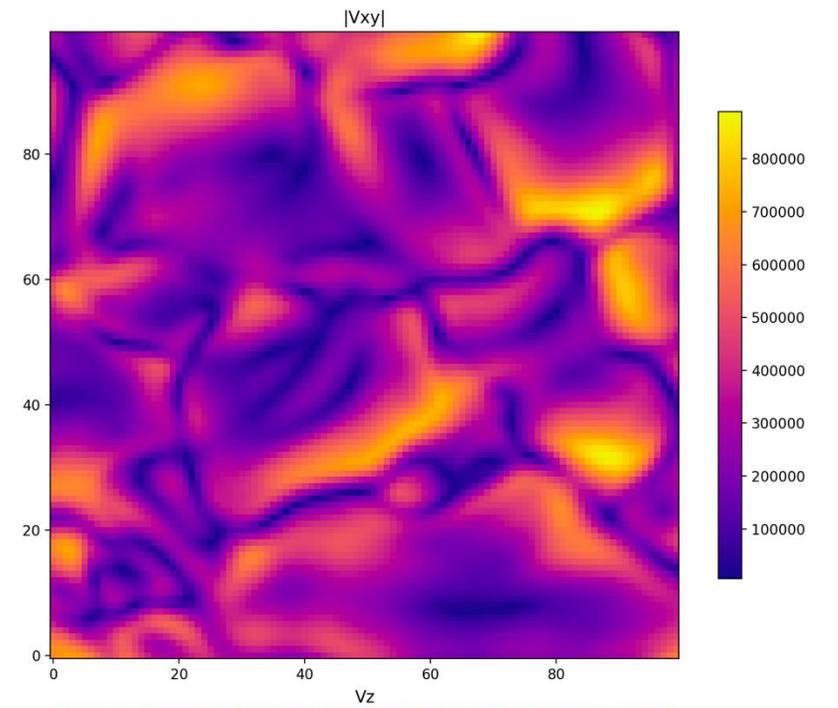
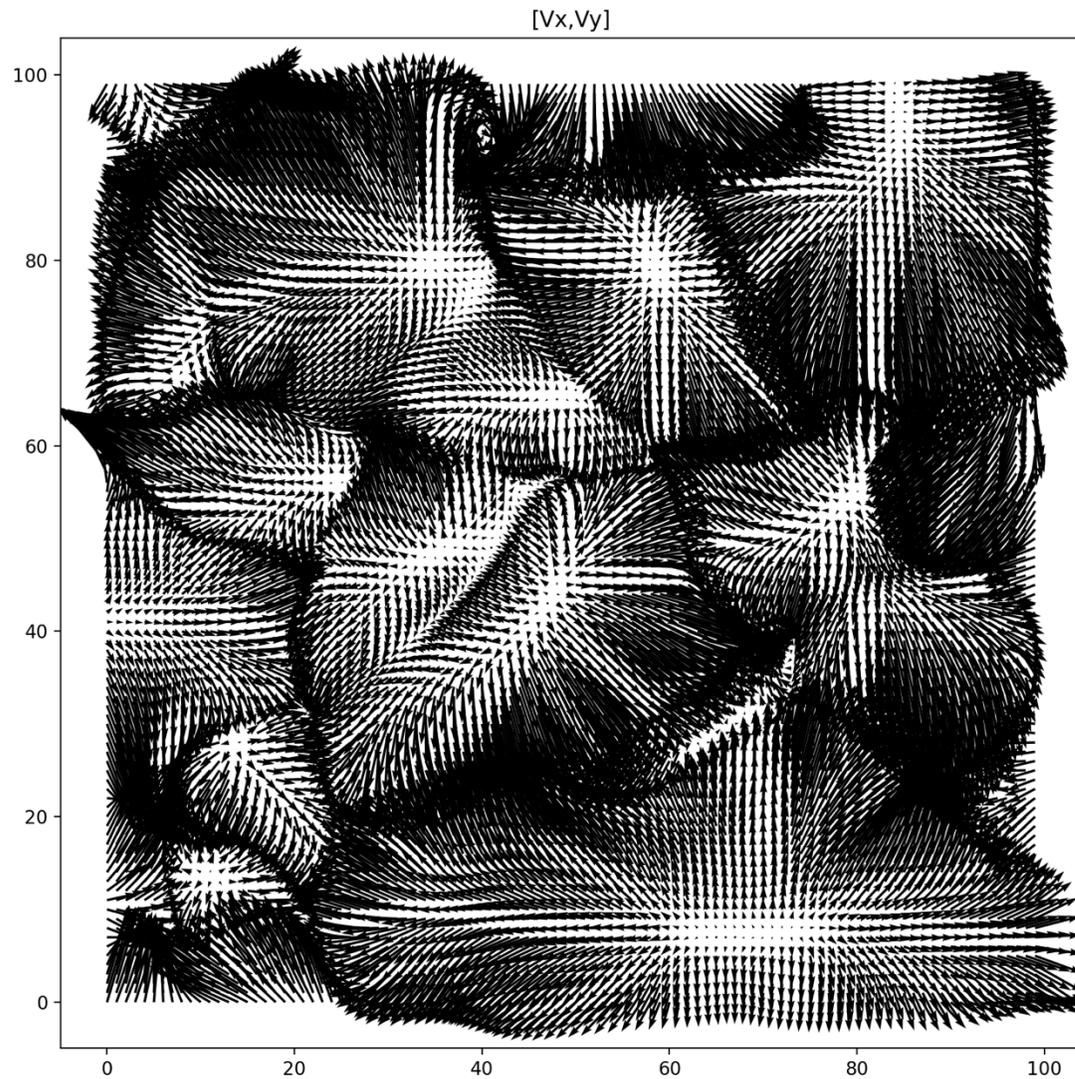


**Are rotational motions / velocity swirls
in the horizontal flow
a significant coronal driver?**

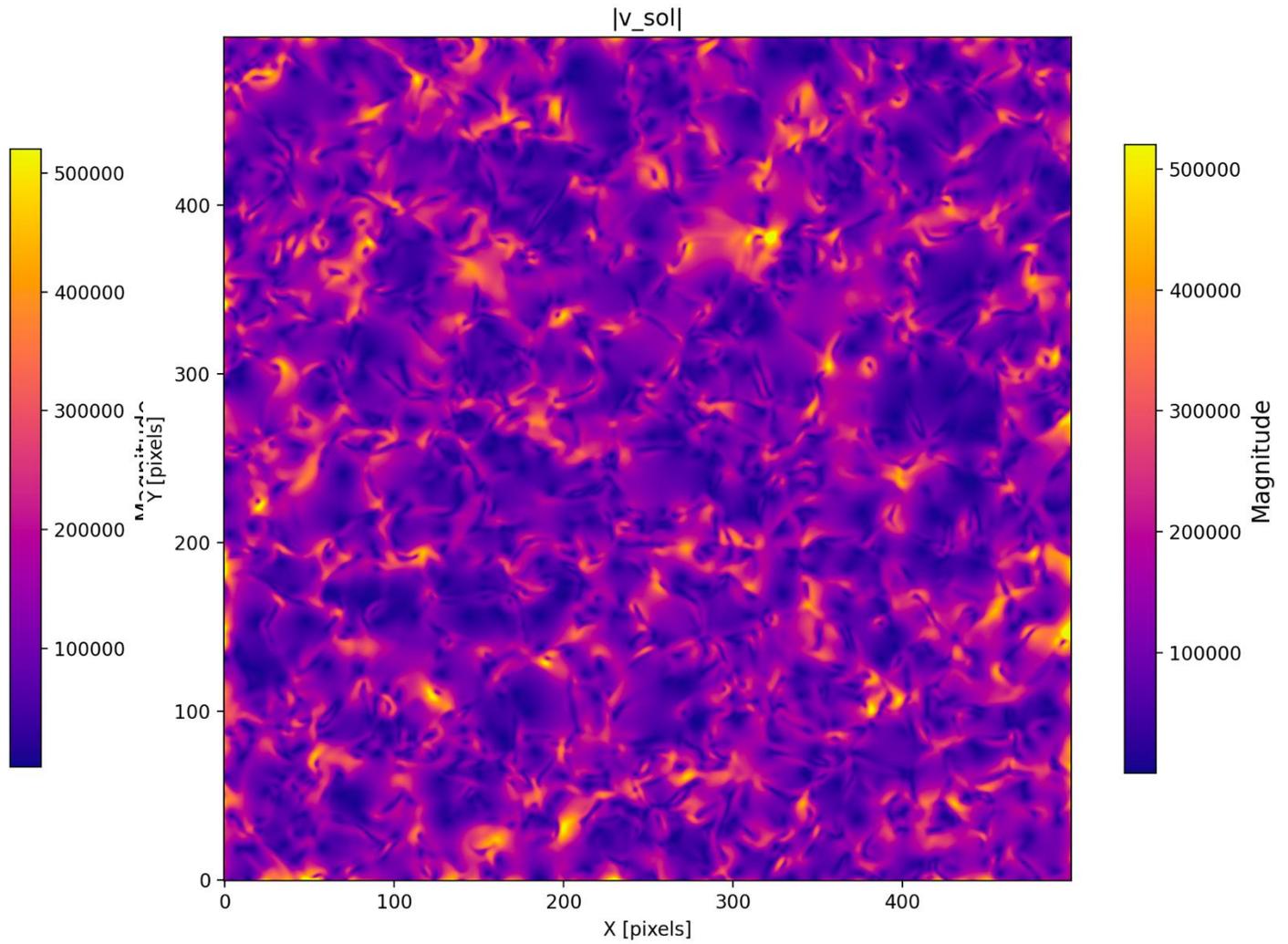
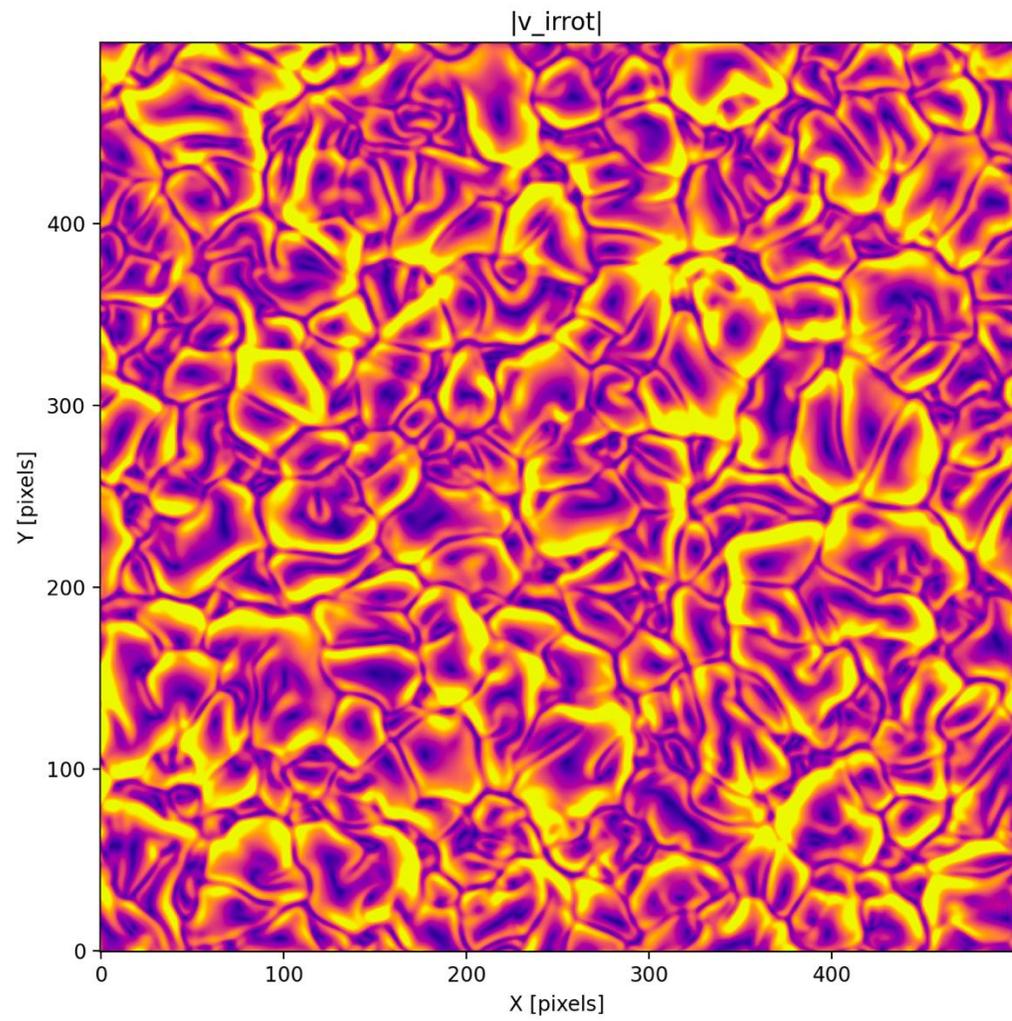
(the question is open)

V. Uritsky
CUA/NASA Goddard

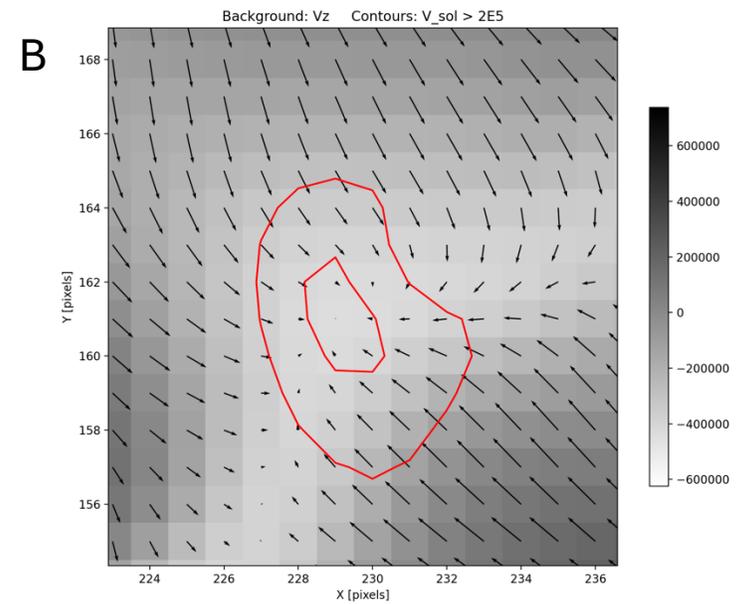
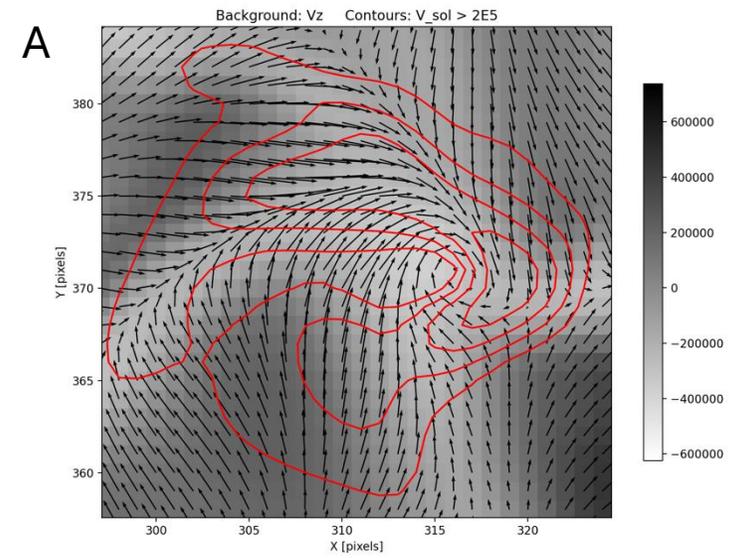
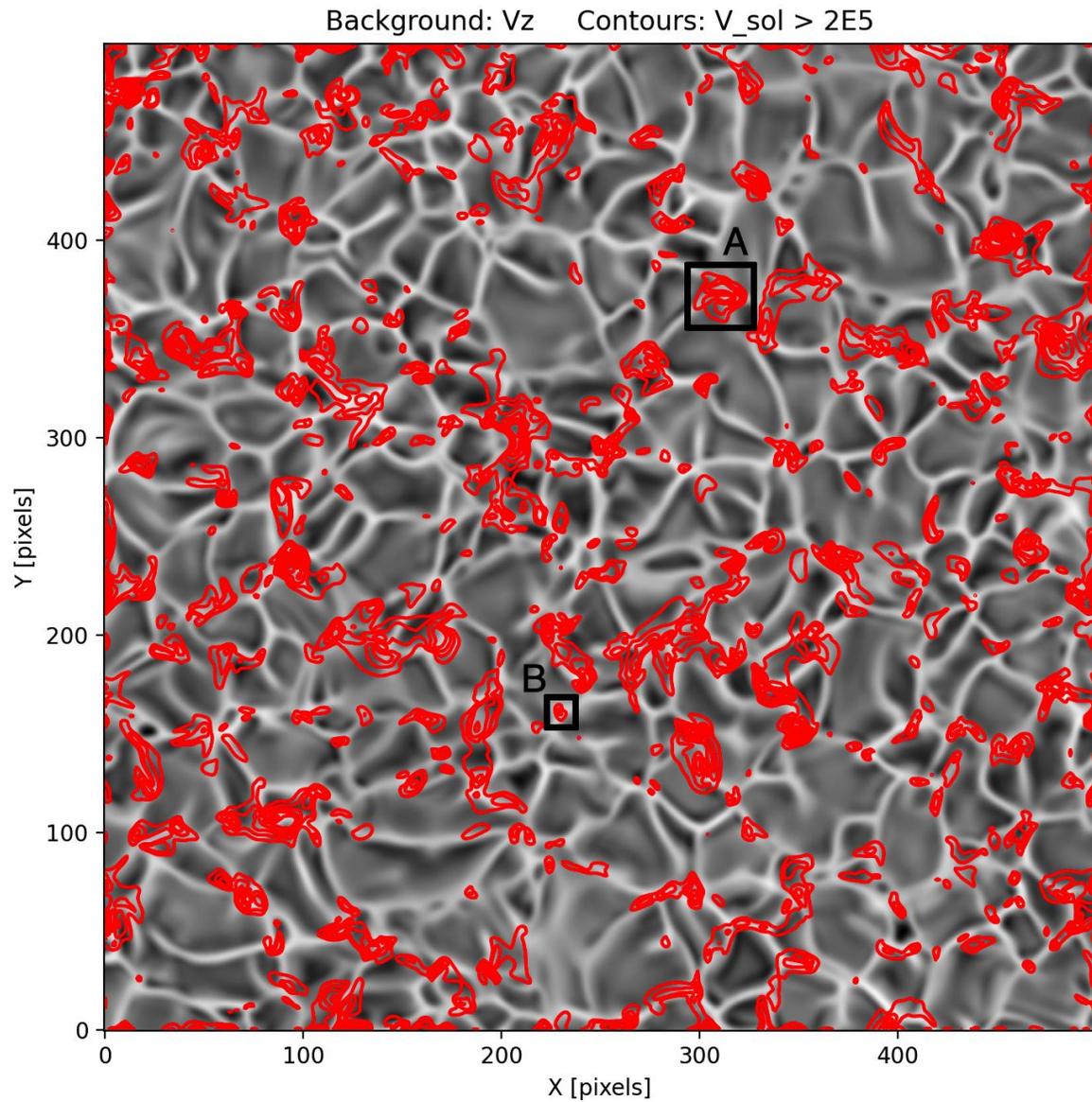
Granular flow structure in Irina's simulation (close-up)



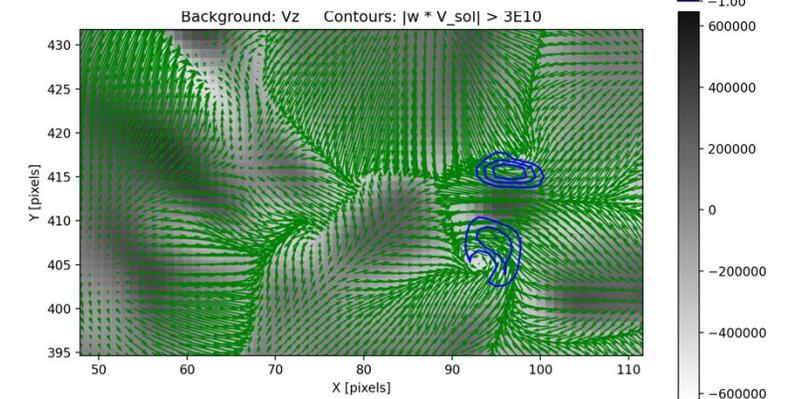
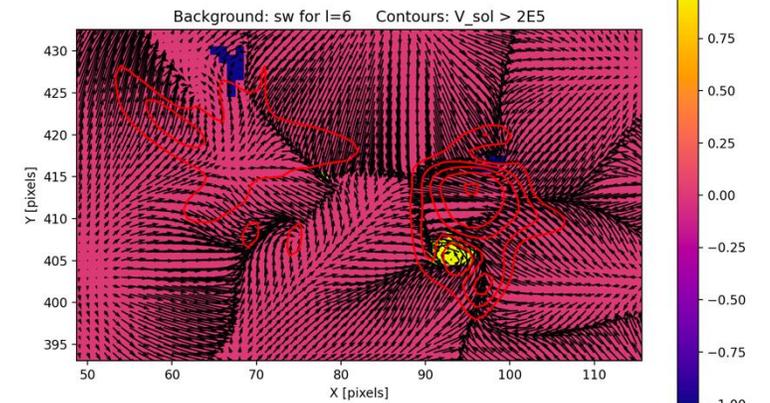
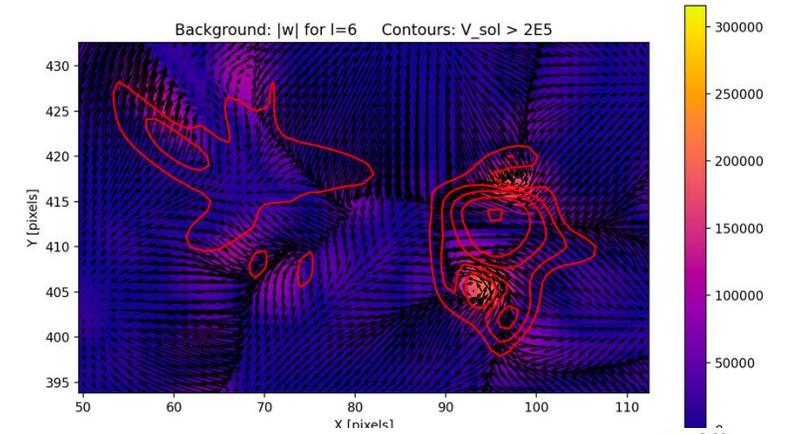
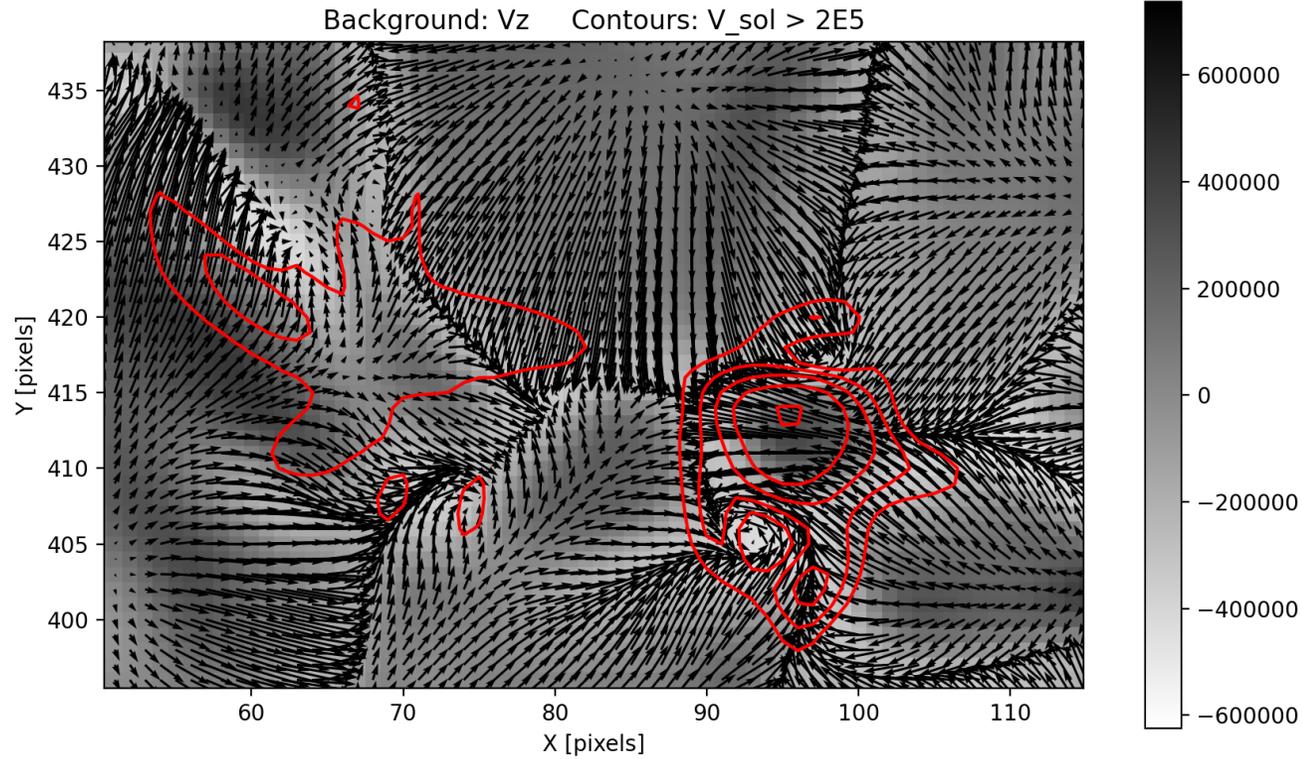
Helmholtz components of the horizontal flow



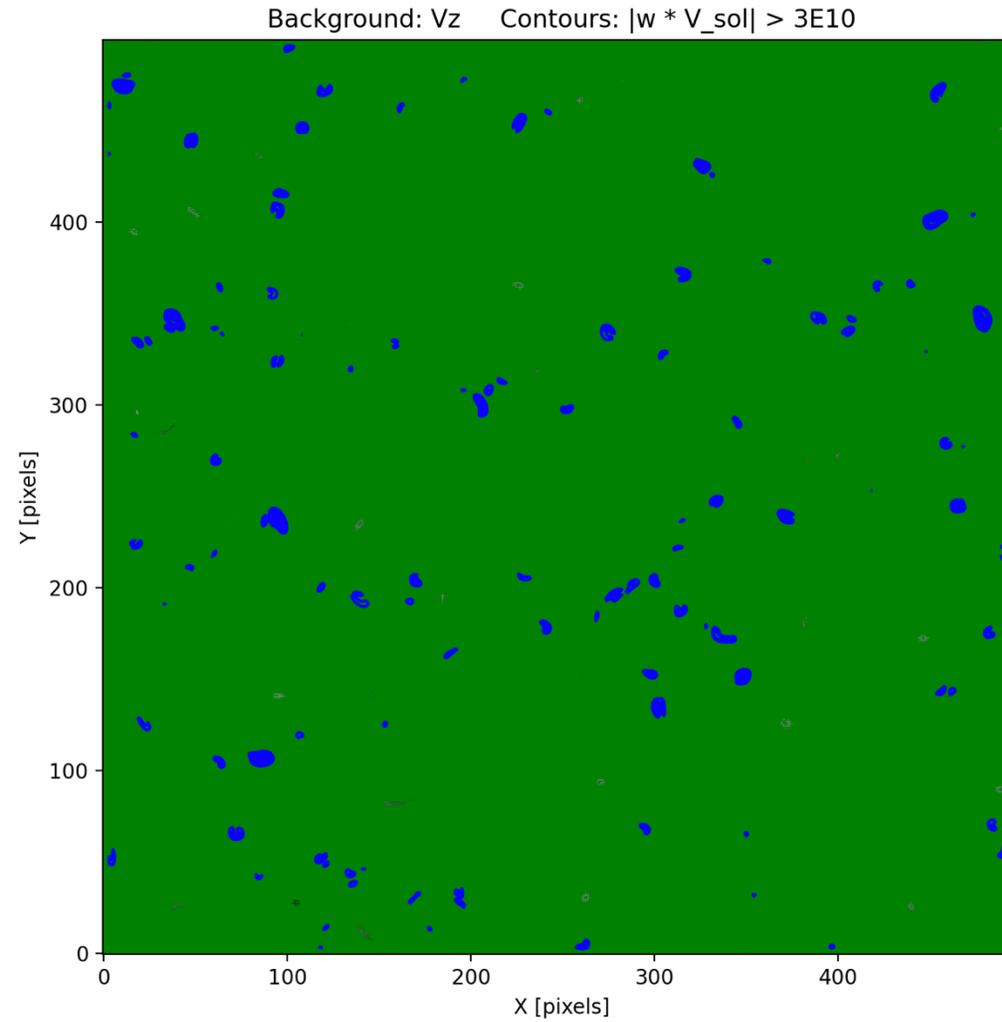
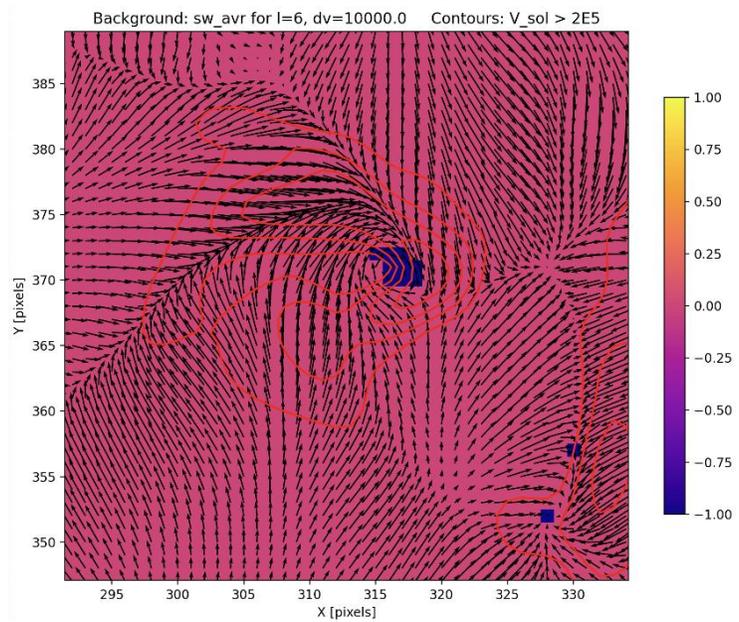
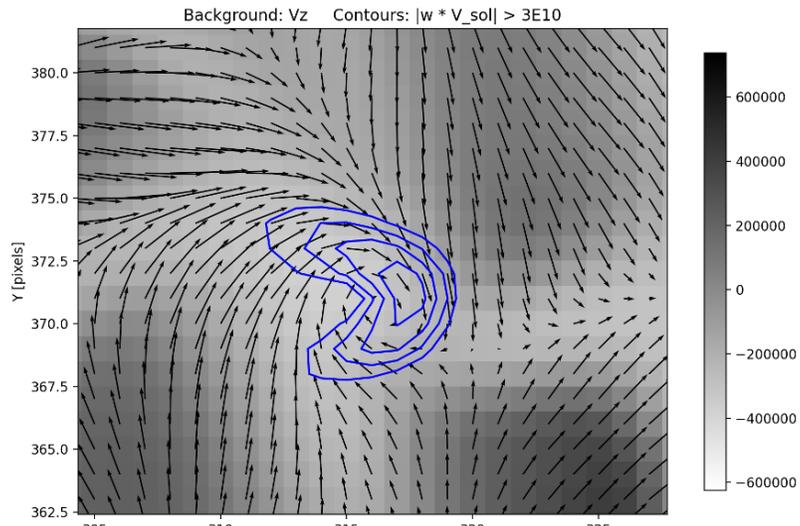
V_{sol} is not a reliable marker of v rotation



In search for a (more reliable) marker of velocity swirls

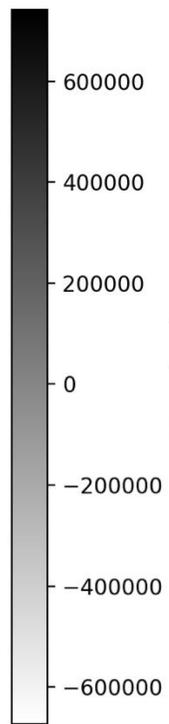
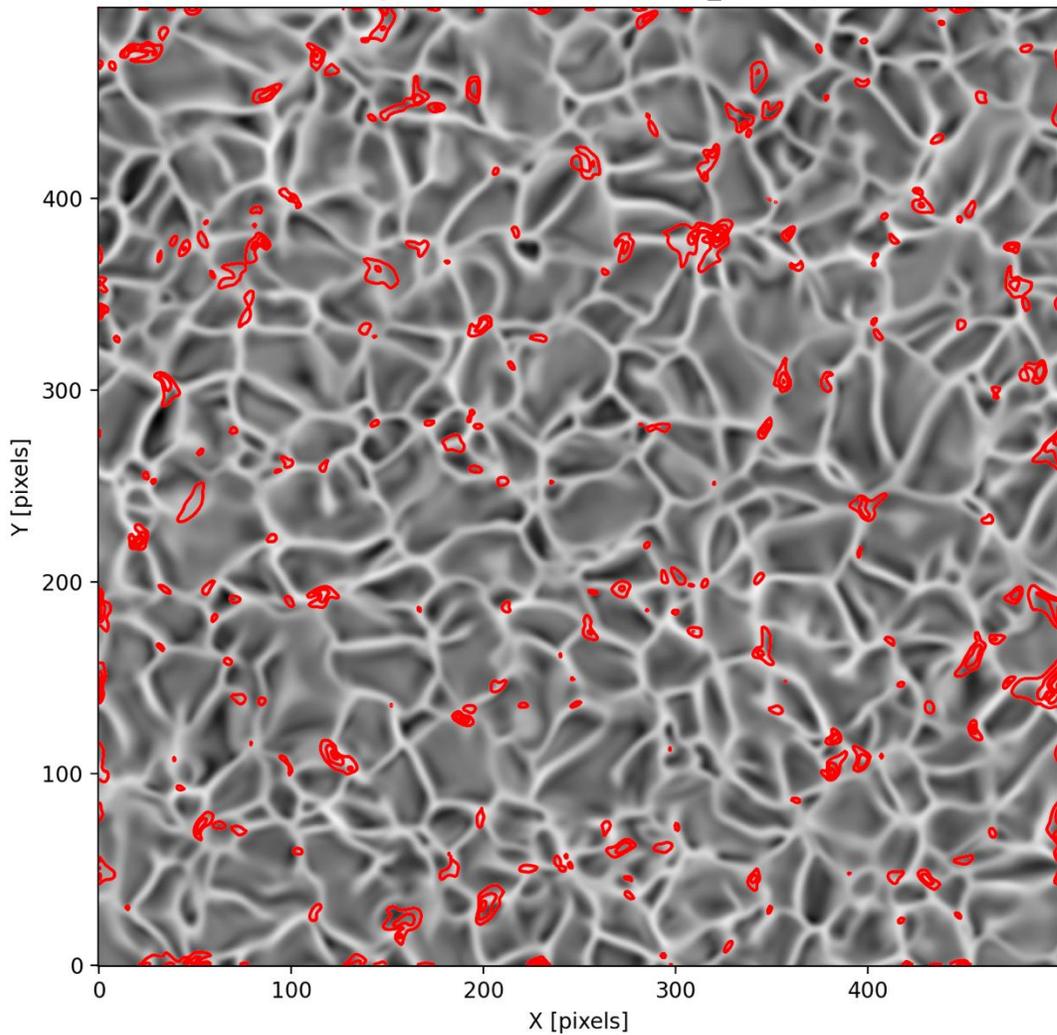


In search for a (more reliable) marker of velocity swirls

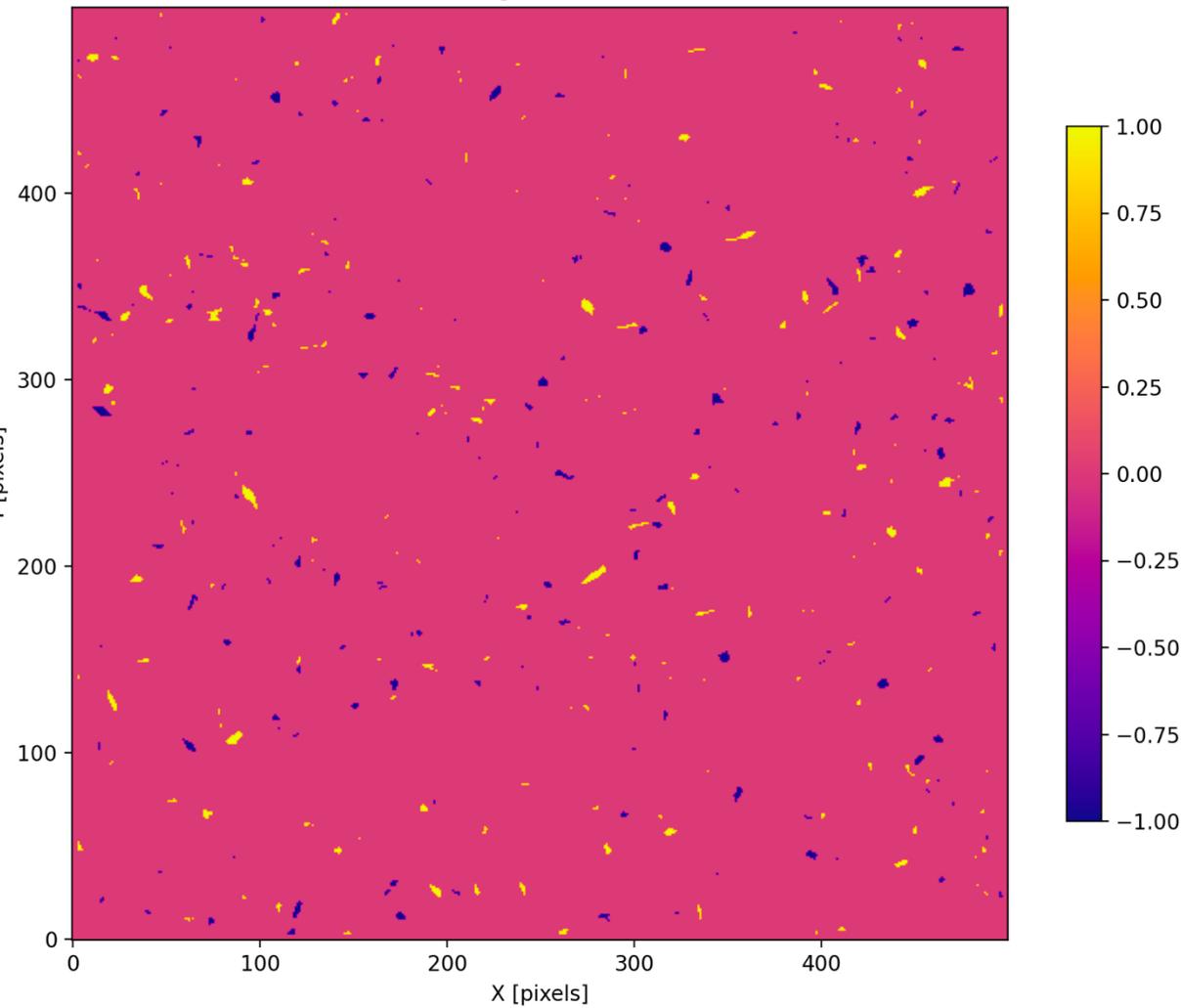


In search for a (more reliable) marker of velocity swirls

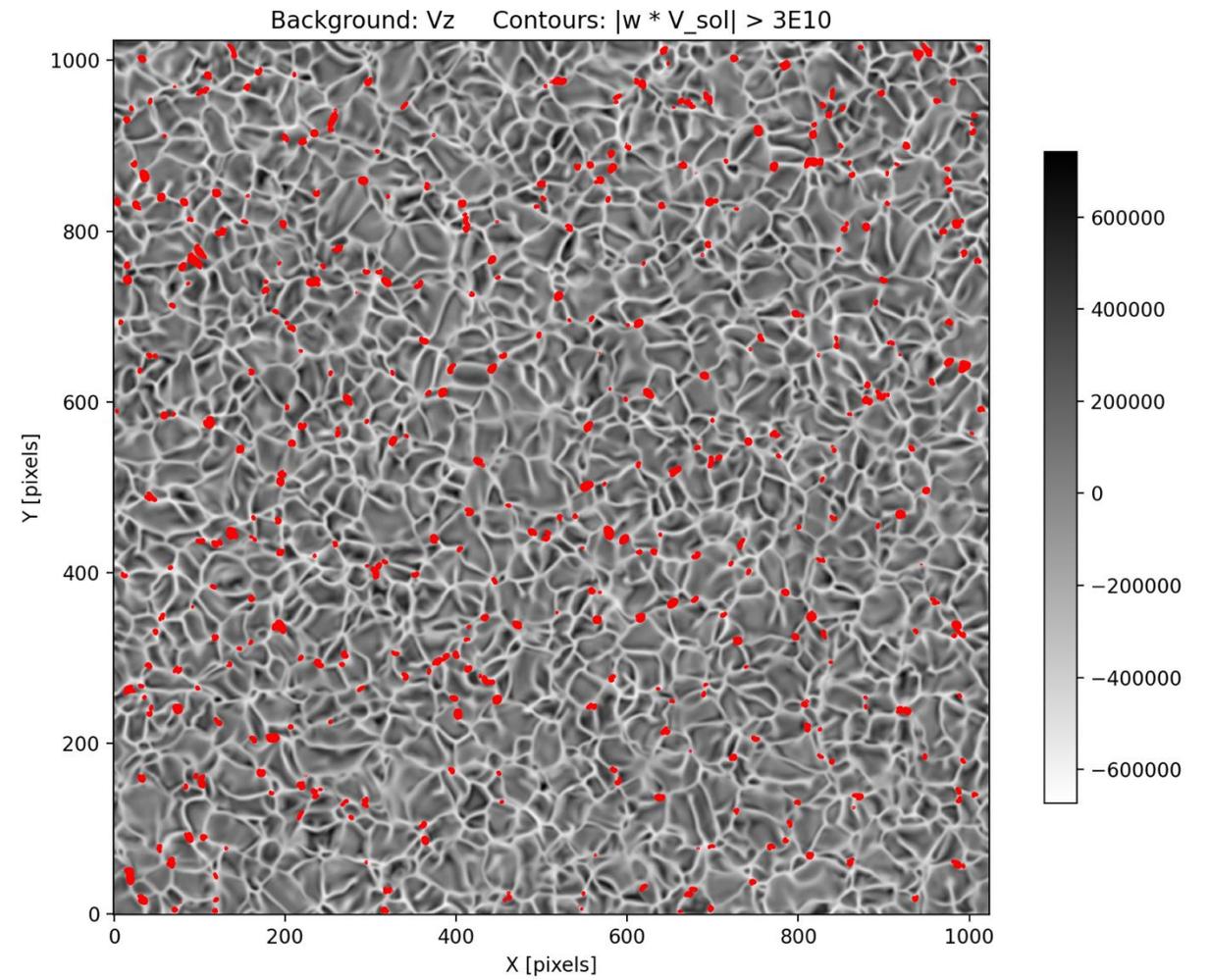
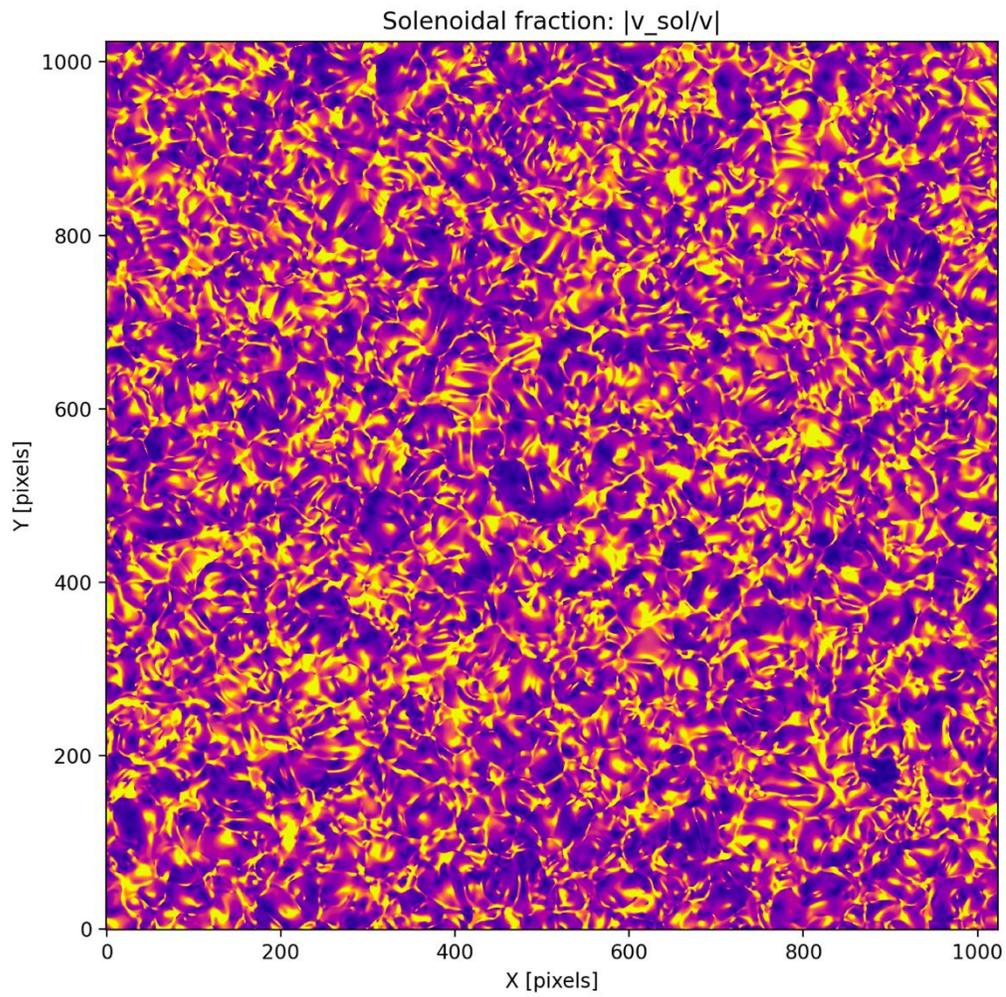
Background: Vz Contours: $V_{\text{sol}} > 3E5$



Background: sw

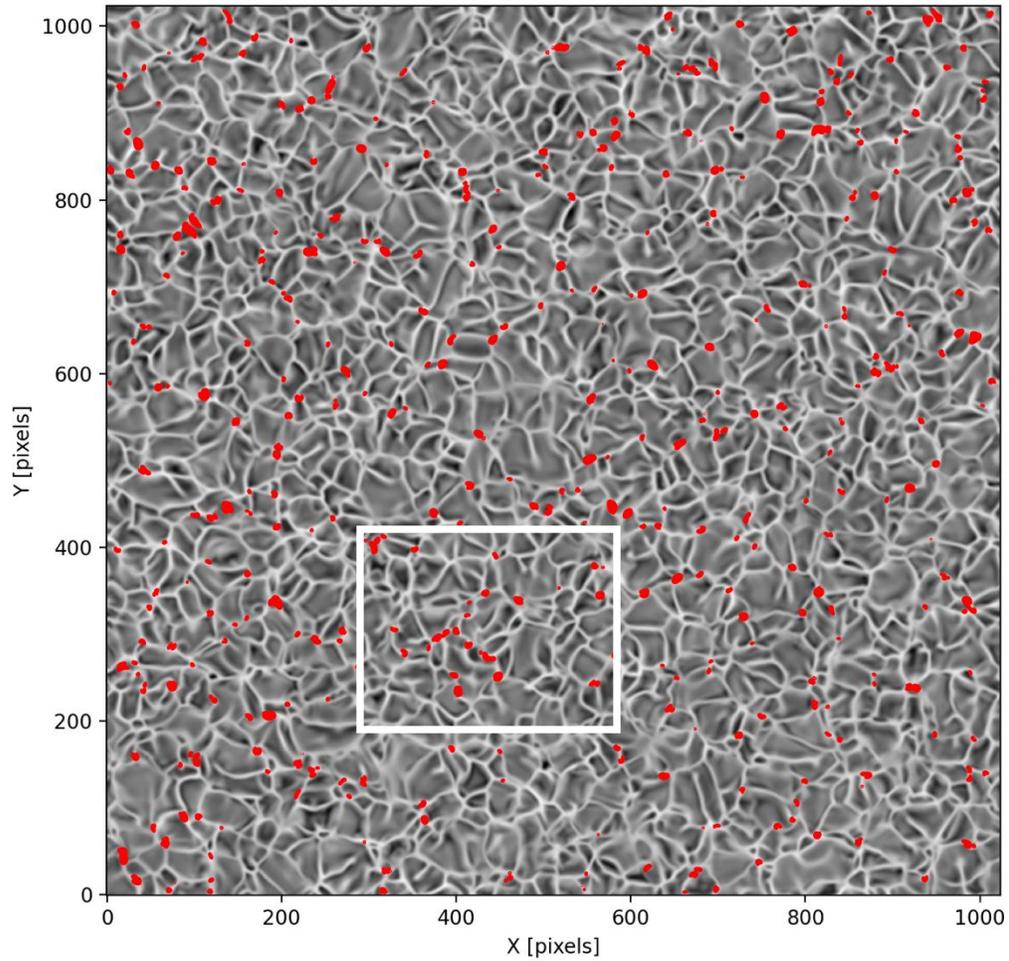


Swirling flow regions are a subset of solenoidal flow

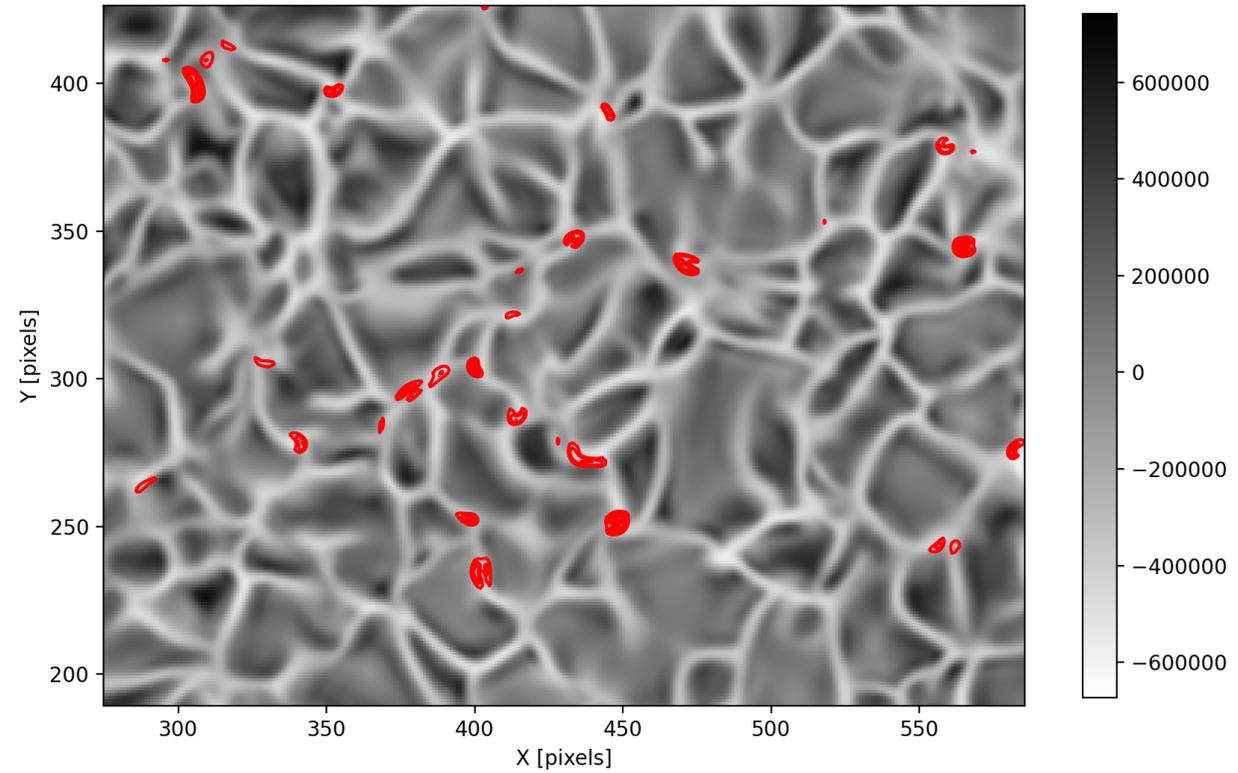


Swirling flows at intergranular lane junctions

Background: V_z Contours: $|w * V_{sol}| > 3E10$

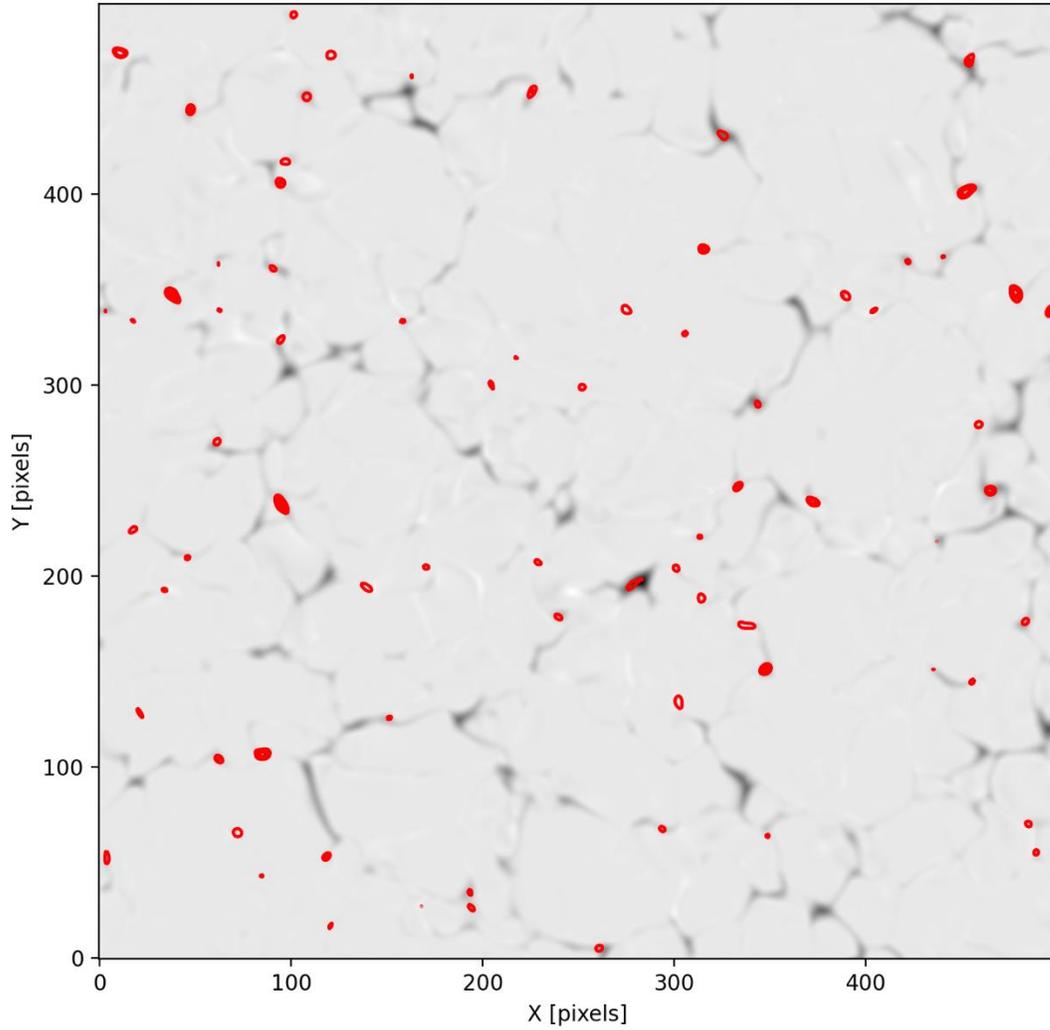


Background: V_z Contours: $|w * V_{sol}| > 3E10$

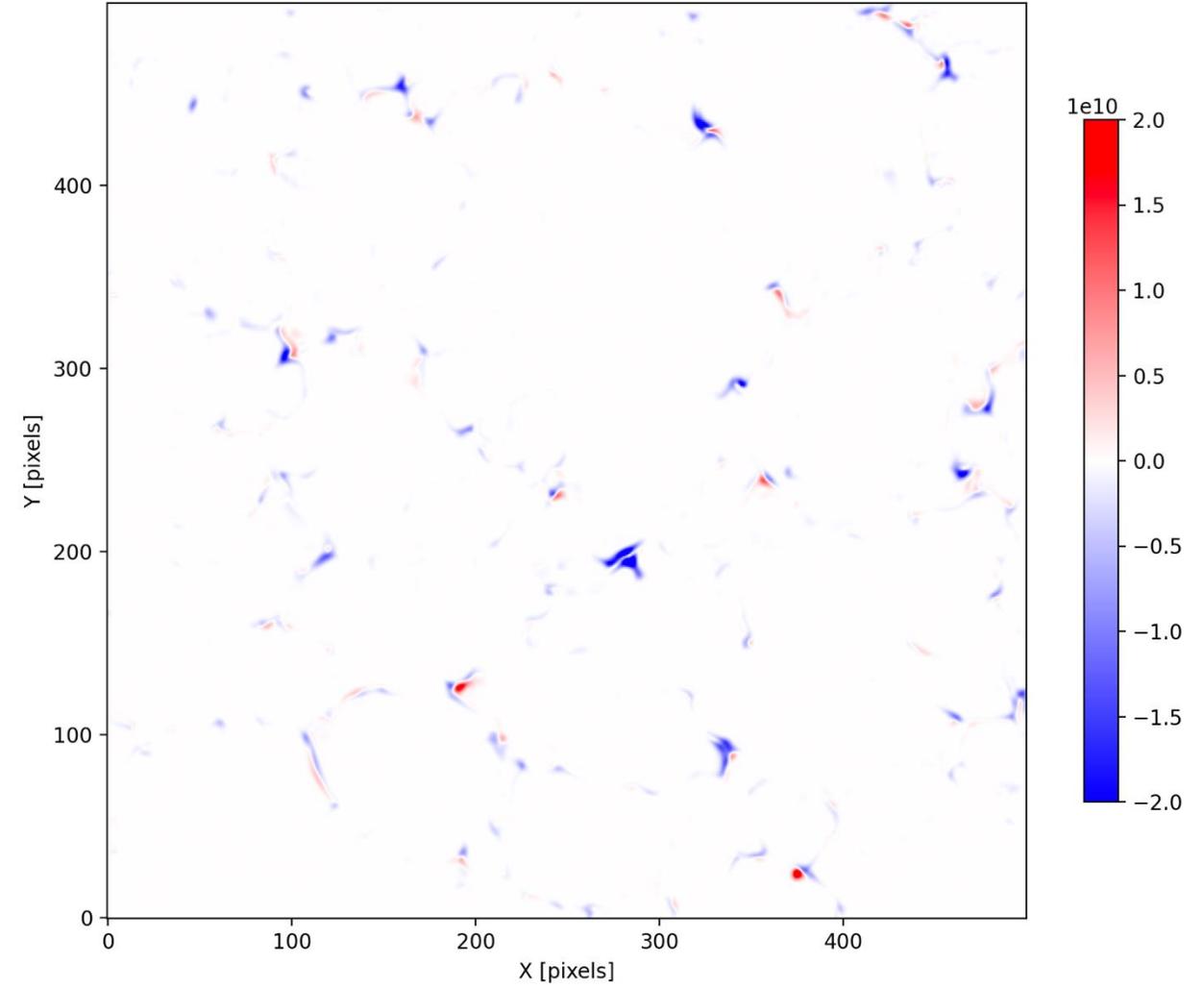


Magnetic carpet, high vorticity regions and vertical Poynting flux

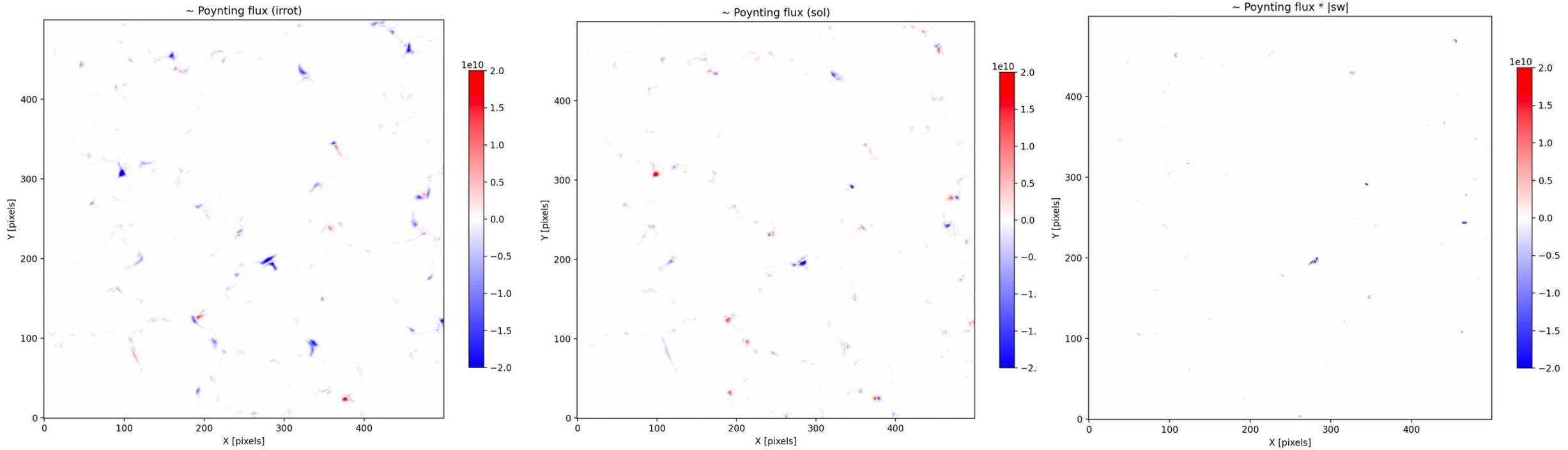
Background: B_z Contours: $|w| > 5E4$



\sim Poynting flux (total)



Vertical Poynting flux estimates



$\langle |V_{xy}| \rangle = 325421$; Helmholtz RMS = 4934 = **1.5%**

	<u>Signed</u> (x 10^{-10})	<u>Unsigned</u> (x 10^{-10})
<u>P</u>	-1833	3098
<u>P irrot</u>	-1599	2732
<u>P sol</u>	-244	1698
<u>P * sw </u>	-60	204
<u>P irrot * sw </u>	-25	152
<u>P sol * sw </u>	-35	166

