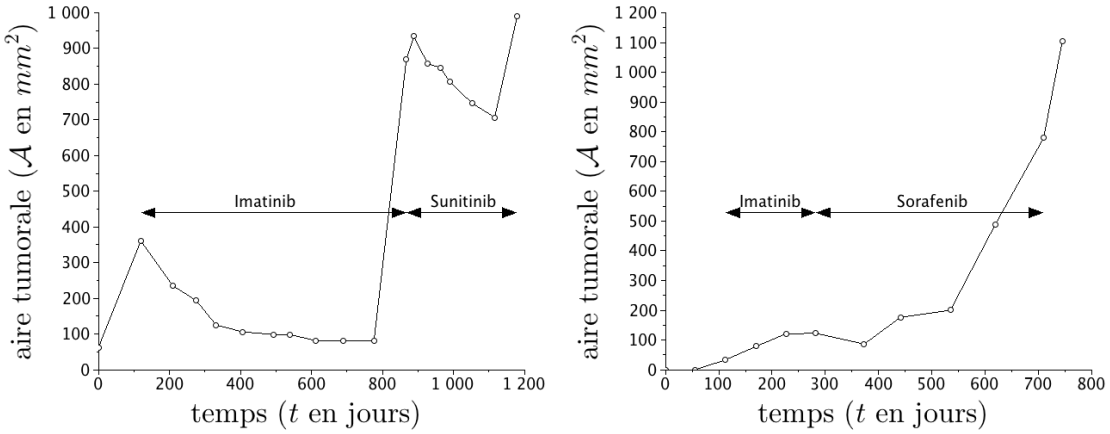
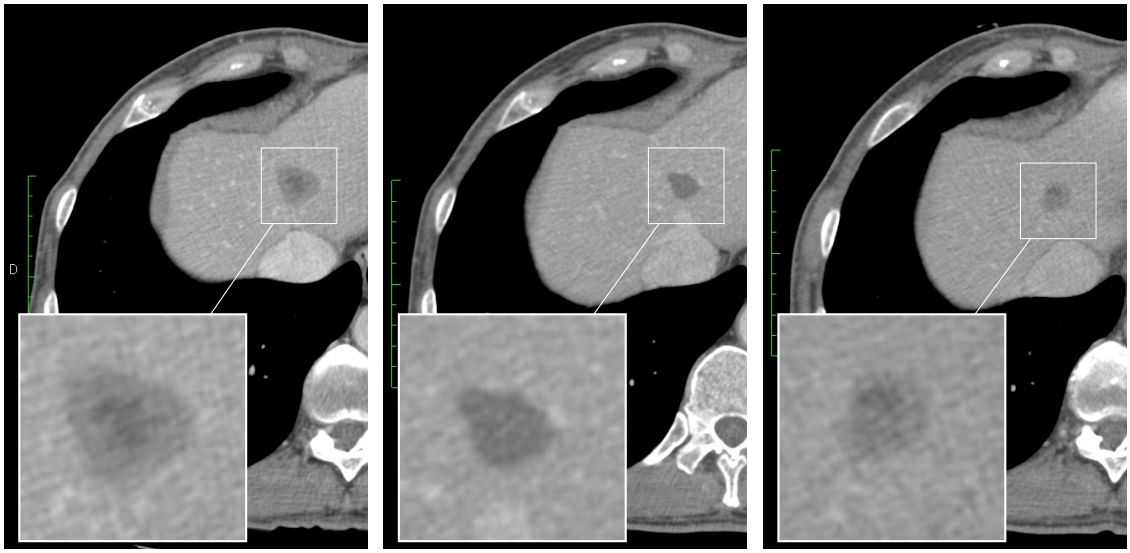


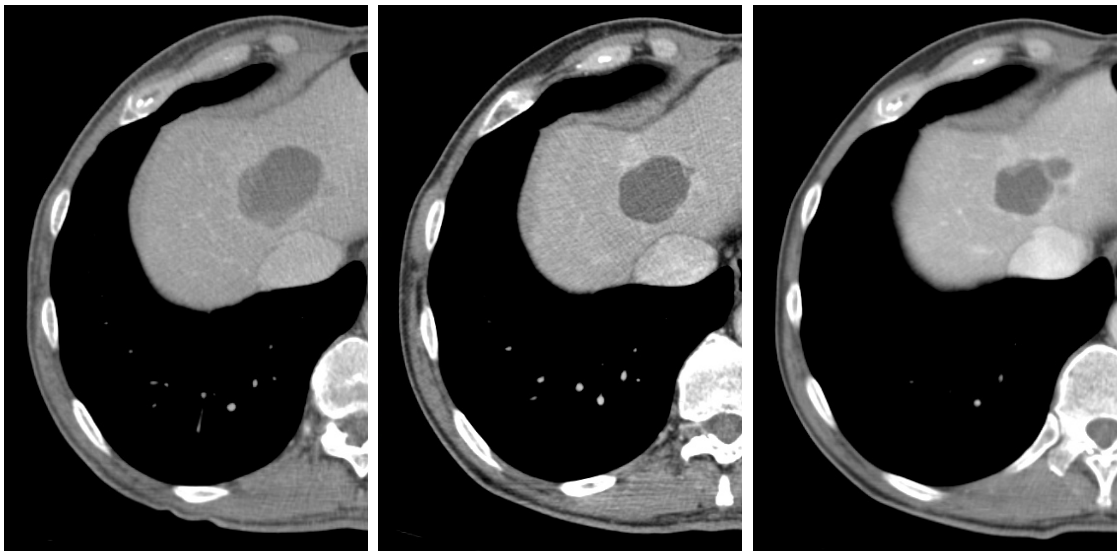
(a) Patient A : profile that has a good reponse to the treatment.

(b) Patient E : typical profile of resistance to imatinib associated to a particular genetic KIT mutation (reported in EXON11).

FIGURE 1 – Evolution of GIST metastases of two differents patients.
Figure 1a is representative of the most common evolution of GIST metastases, while Figure 1b presents the typical evolution of tumors with a genetic mutation.



(a) Sept 16, 2008 – Day 119 (b) June 30, 2009 – Day 406 (c) July 5, 2010 – Day 776



(d) Oct 25, 2010 – Day 888 (e) Jan 7, 2011 – Day 962 (f) June 10, 2011 – Day 1116

FIGURE 2 – Spatial evolution of the liver metastasis of patient A on a series of CT-scan s.

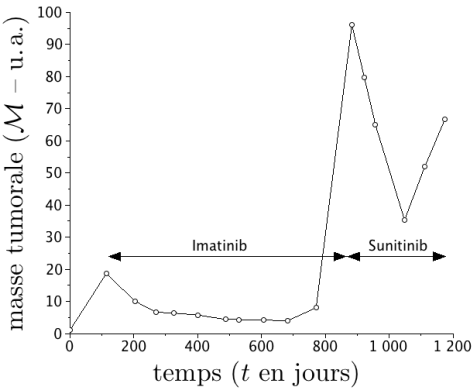
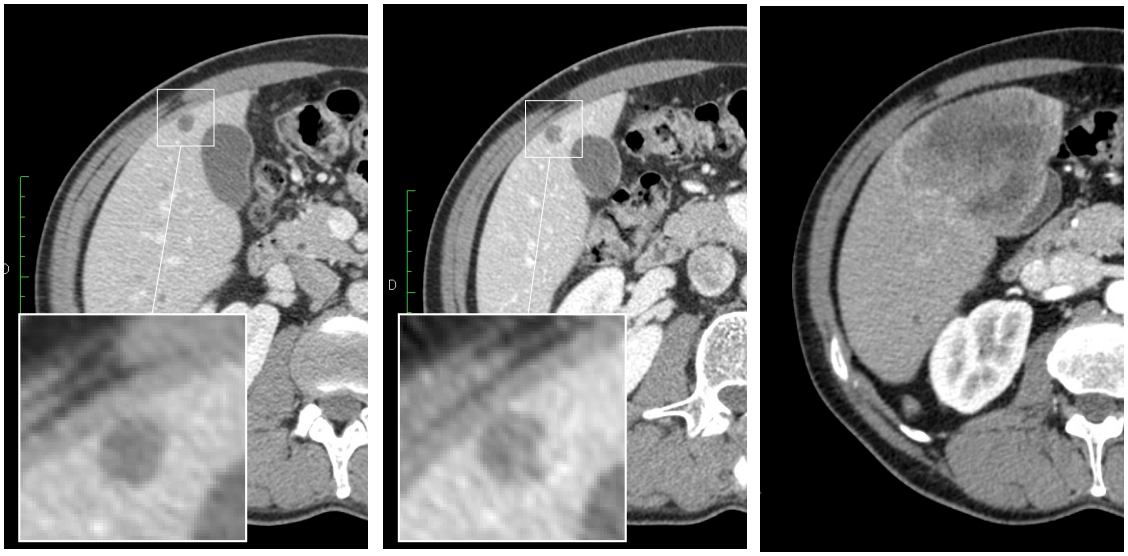
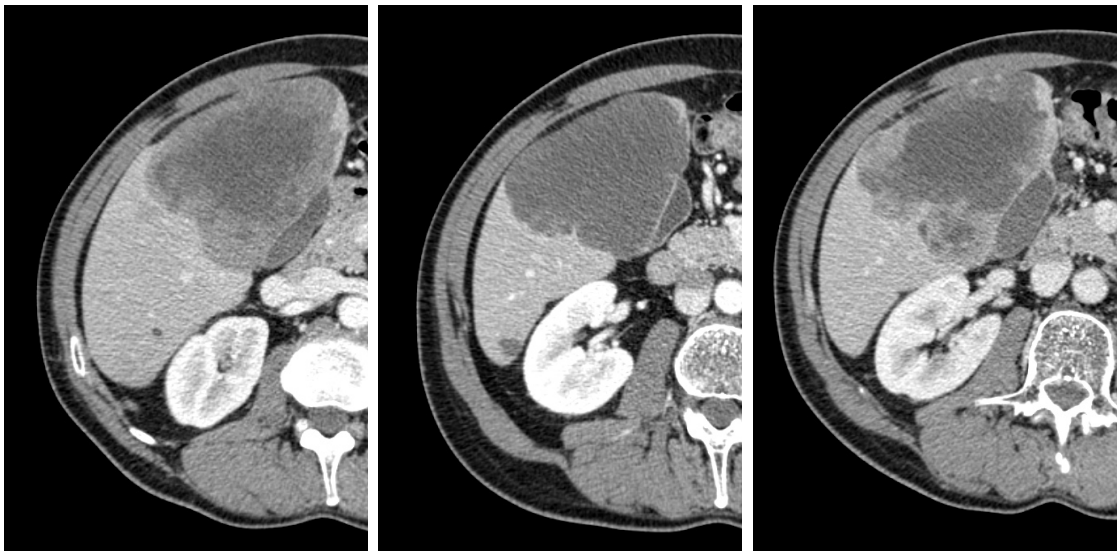


FIGURE 3 – Patient A : tumor mass evolution (normalization of integral of grey levels) with respect to time (in days).

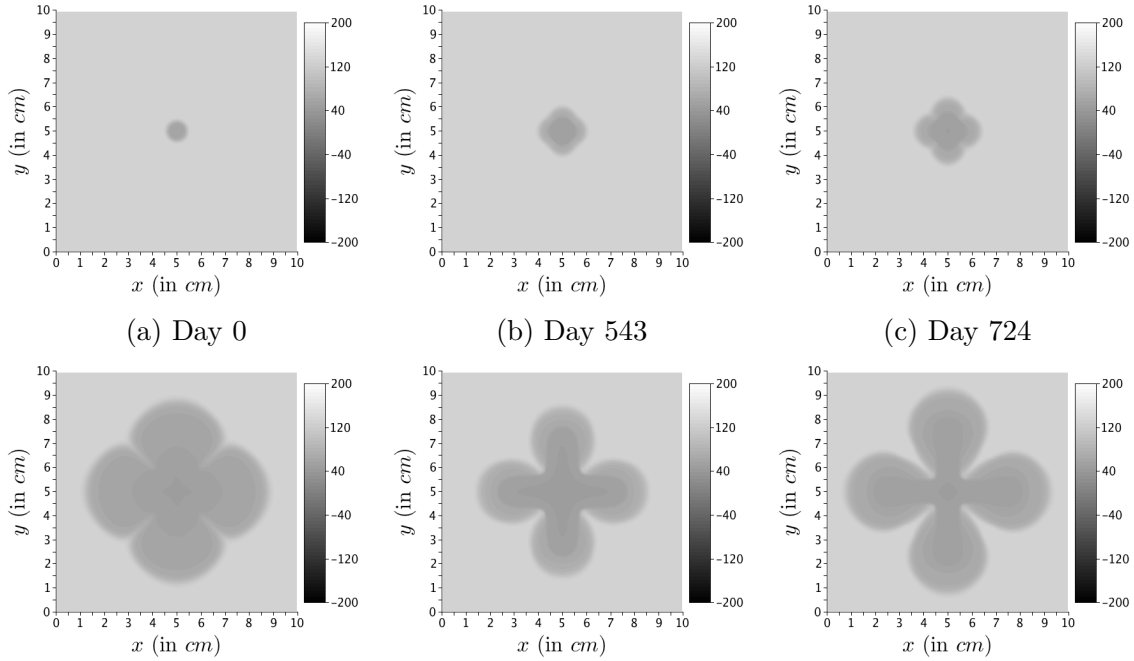


(a) May 23, 2007 – Day 0 (b) July 25, 2008 – Day 429 (c) Sept 14, 2009 – Day 845



(d) April 06, 2010 – Day 1049 (e) Sept 28, 2010 – Day 1224 (f) May 20, 2011 – Day 1458

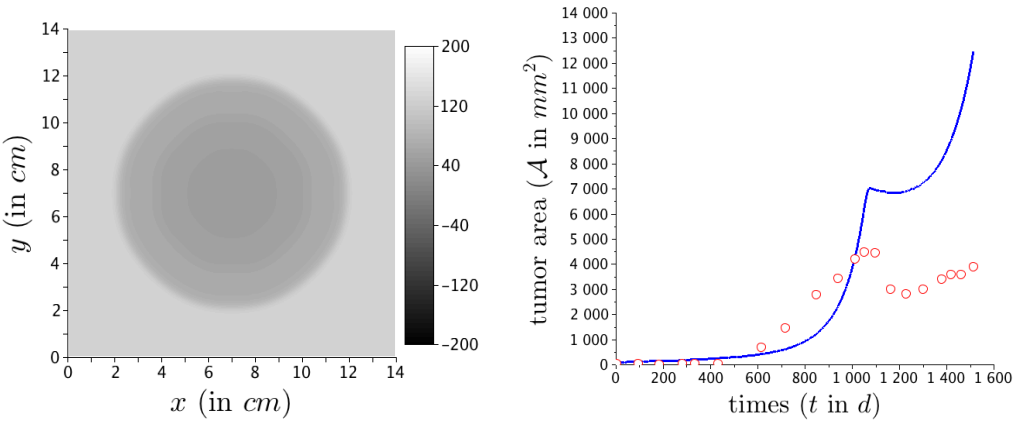
FIGURE 4 – Spatial evolution of the patient B metastasis on a series of CT-scans.



(a) Day 0 (b) Day 543 (c) Day 724

(d) Day 1053 (e) Day 1399 (f) Day 1600

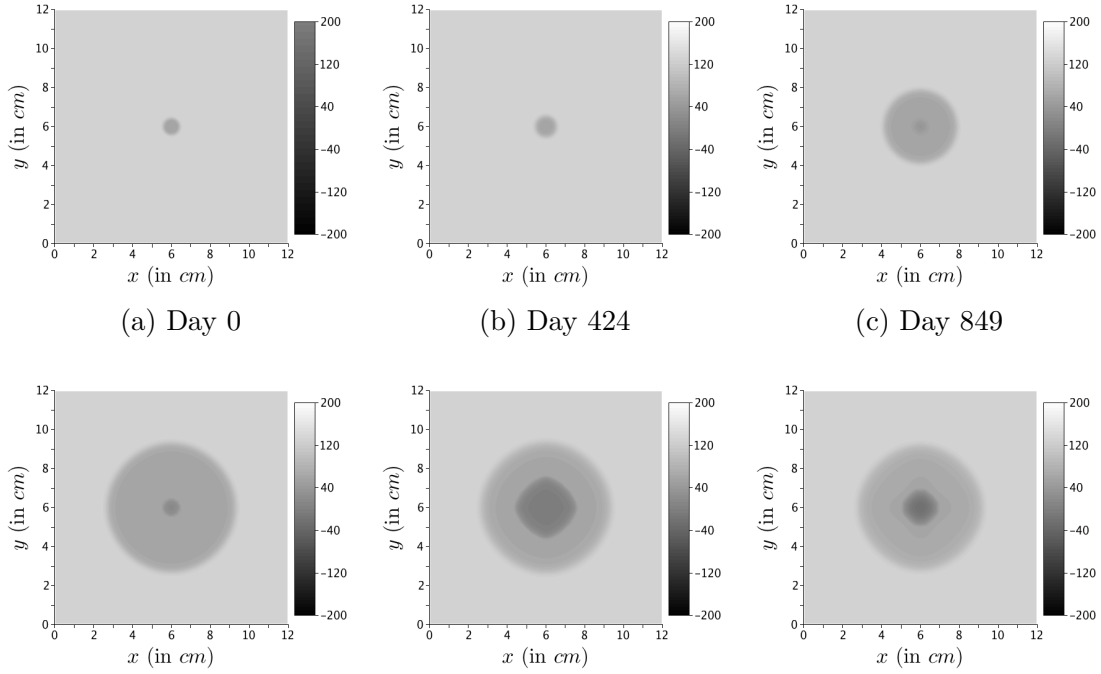
FIGURE 5 – Numerical simulations with standard WENO5 stencil for patient B : spatial evolution of the lesion with numerical reconstitution of CT-scan s. The unit of grey scale is arbitrary.



(a) Spatial aspect of the tumor on day 1366 with numerical reconstitution of CT-scan s. The unit of grey scale is arbitrary.

(b) Evolution (in days) of tumor area (in mm^2).

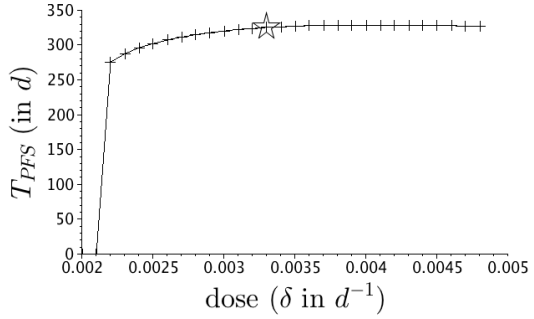
FIGURE 6 – Numerical simulation with twin-WENO5 scheme ($\beta = 0.26$) with the same parameters as for Figure 5 . The numerical tumor area does not fit with the data.



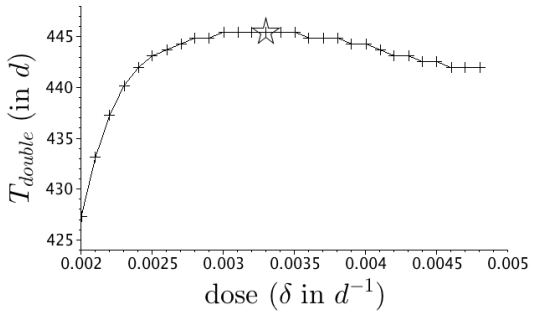
(a) Day 0 (b) Day 424 (c) Day 849

(d) Day 1052 (e) Day 1222 (f) Day 1460

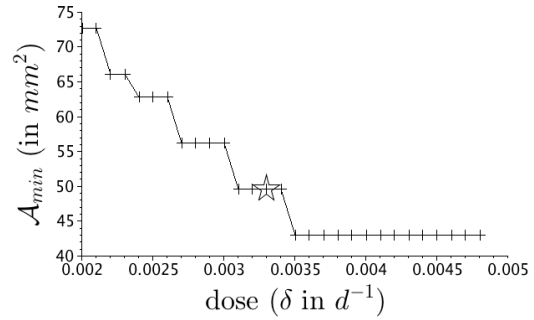
FIGURE 7 – Numerical simulations with twin-WENO5 ($\beta = 0.3$) for patient B with fitted parameters on the tumor area : spatial evolution of the lesion with numerical reconstitution of CT-scans.
The unit of grey scale is arbitrary.



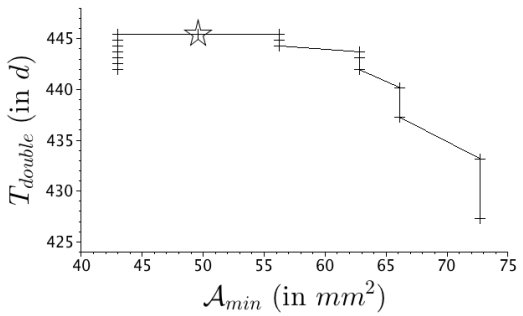
(a) Progression free survival time (T_{PFS} in days) as a function of δ.



(b) Time corresponding to the growth of tumor area by a factor 2 (T_{double} in days) as a function of δ.



(c) Minimal area reached ($\mathcal{A}_{min}$ in mm^2) as a function of δ.



(d) Phase portrait.

FIGURE 8 – matinib efficiency on patient B.
The star corresponds to the parameters used in Figure **??** for the fit of the tumor area.