

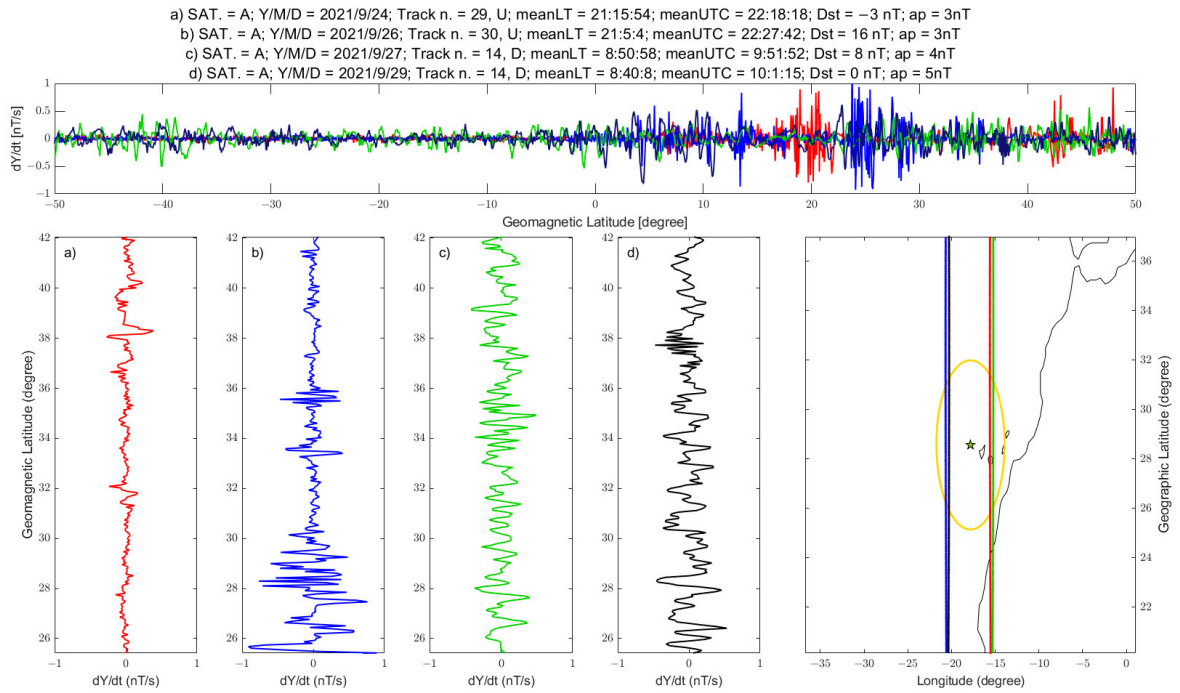
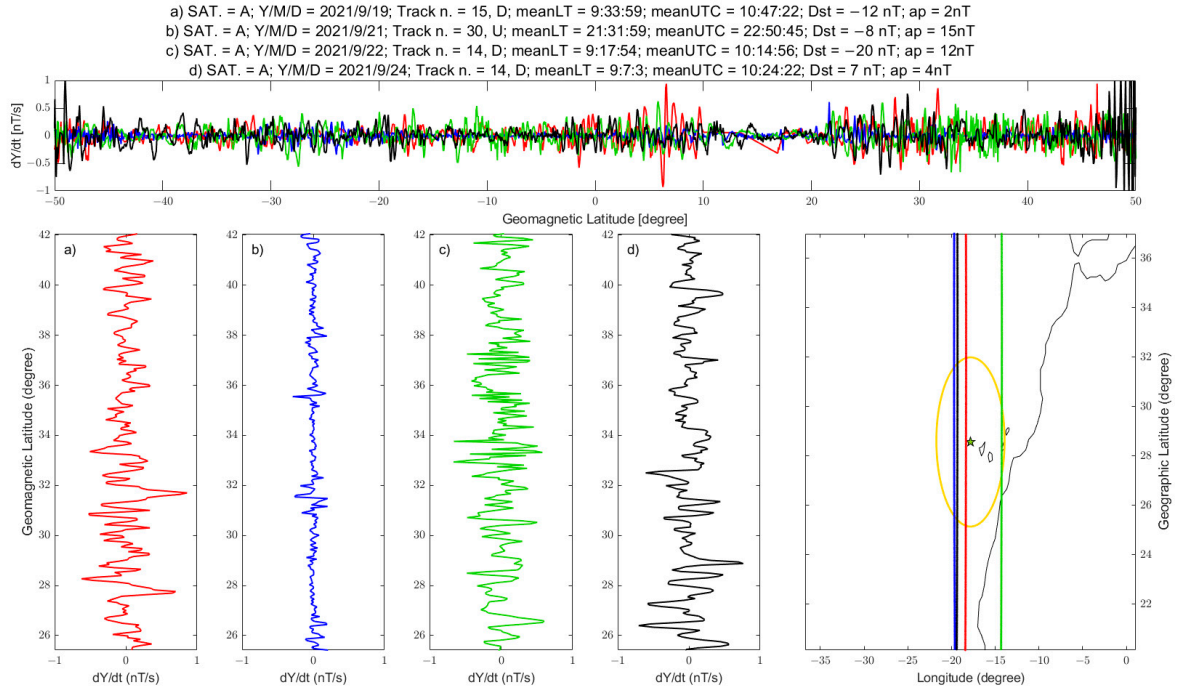
# Supplementary Materials: Atmospheric and Ionospheric Effects of La Palma Volcano 2021 Eruption

Hanshuo Zhang, Kaiguang Zhu, Yuqi Cheng, Dedalo Marchetti, Wenqi Chen, Mengxuan Fan, Siyu Wang, Ting Wang, Donghua Zhang and Yiqun Zhang

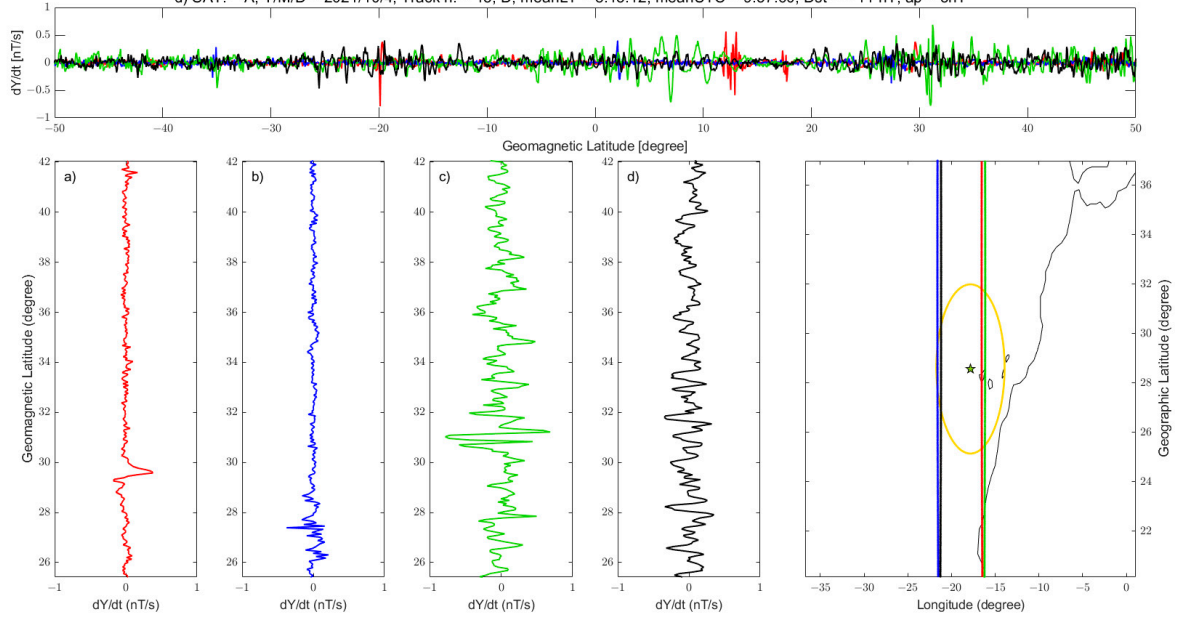
In this supplementary material, all the Swarm tracks that crossed the study area from 19 September to 31 December 2021 are reported.

In the figures, each colour represents data from a specific satellite orbit. The anomalous windows are marked in dark purple.

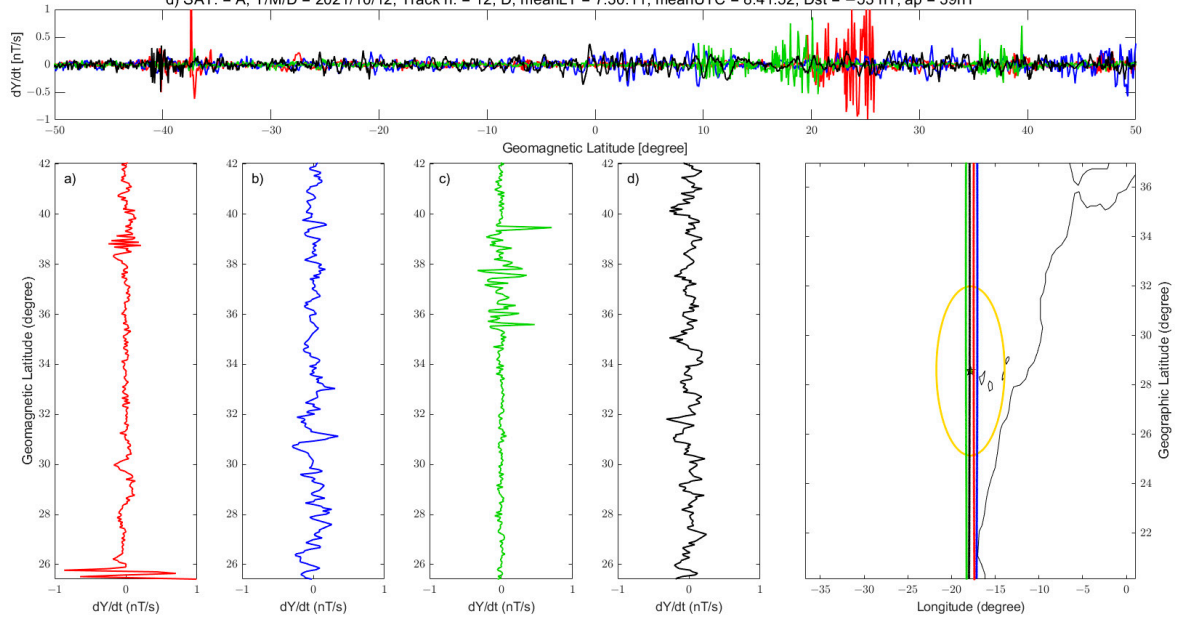
The title of each figure reports the satellite (A = Alpha, B = Bravo, C = Charlie), the track number, the mean Local and UT Time at the track centre and the geomagnetic condition for the different satellite orbits. The residuals for Y components are reported, and a map showing the satellite track projection is shown on the right.



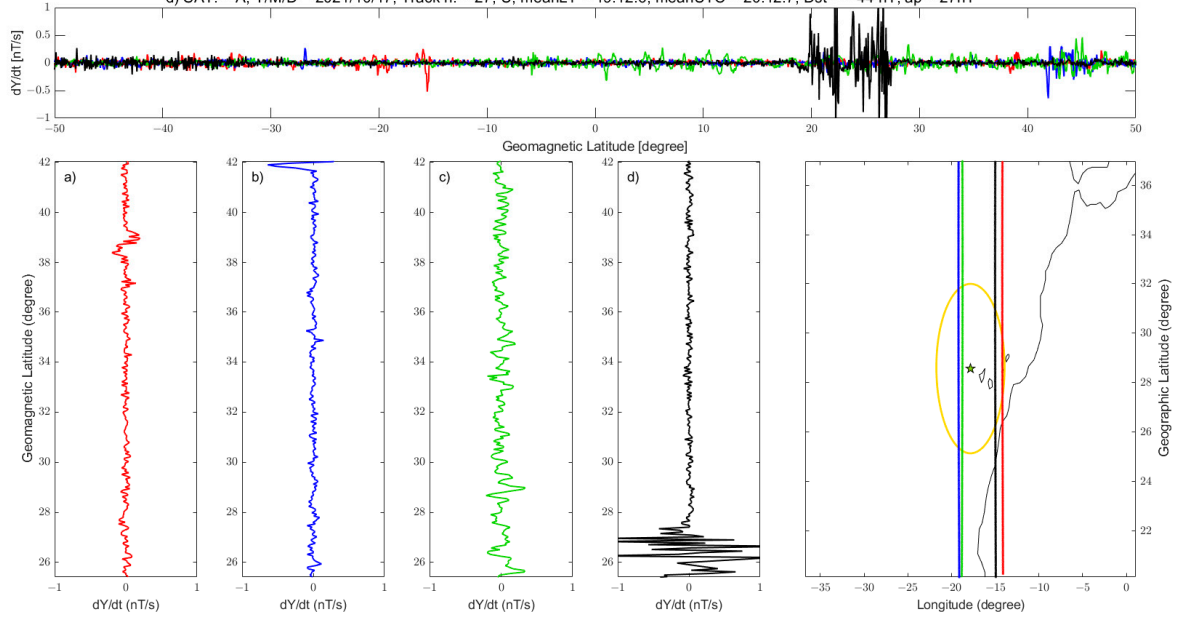
- a) SAT. = A; Y/M/D = 2021/9/29; Track n. = 29, U; meanLT = 20:48:59; meanUTC = 21:55:10; Dst = 14 nT; ap = 5nT  
b) SAT. = A; Y/M/D = 2021/10/1; Track n. = 29, U; meanLT = 20:38:8; meanUTC = 22:4:31; Dst = -23 nT; ap = 0nT  
c) SAT. = A; Y/M/D = 2021/10/2; Track n. = 13, D; meanLT = 8:24:3; meanUTC = 9:28:41; Dst = -11 nT; ap = 27nT  
d) SAT. = A; Y/M/D = 2021/10/4; Track n. = 13, D; meanLT = 8:13:12; meanUTC = 9:37:60; Dst = -11 nT; ap = 3nT



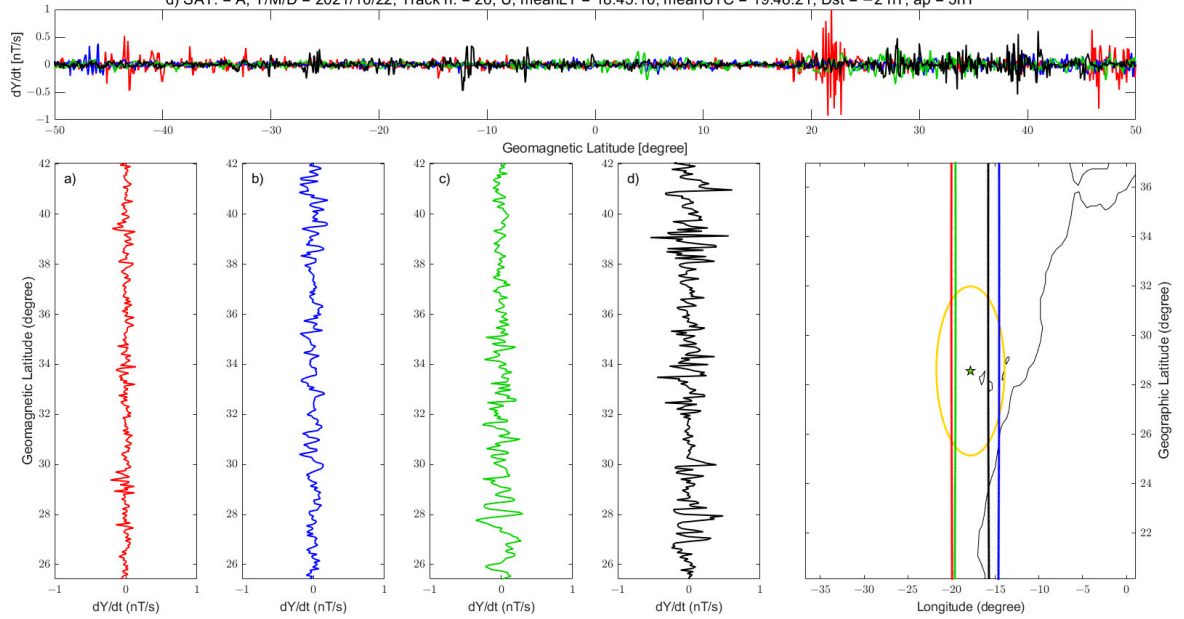
- a) SAT. = A; Y/M/D = 2021/10/4; Track n. = 28, U; meanLT = 20:22:4; meanUTC = 21:31:54; Dst = -15 nT; ap = 6nT  
b) SAT. = A; Y/M/D = 2021/10/7; Track n. = 13, D; meanLT = 7:57:7; meanUTC = 9:5:20; Dst = -11 nT; ap = 2nT  
c) SAT. = A; Y/M/D = 2021/10/9; Track n. = 28, U; meanLT = 19:55:8; meanUTC = 21:8:30; Dst = -5 nT; ap = 3nT  
d) SAT. = A; Y/M/D = 2021/10/12; Track n. = 12, D; meanLT = 7:30:11; meanUTC = 8:41:52; Dst = -53 nT; ap = 39nT



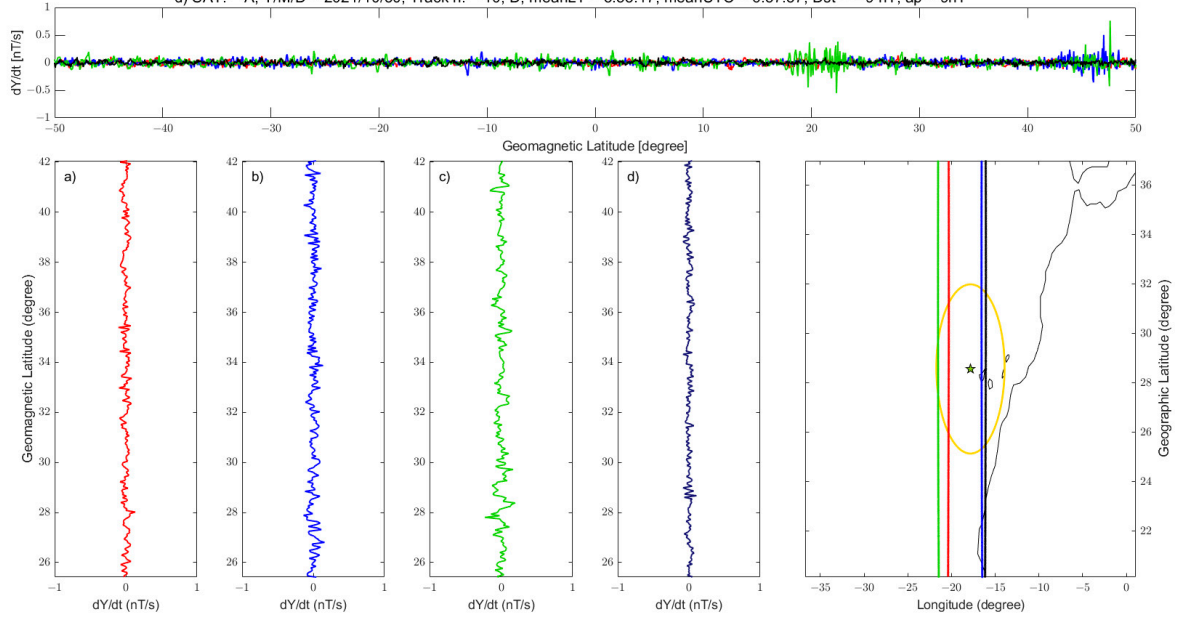
- a) SAT. = A; Y/M/D = 2021/10/12; Track n. = 28, U; meanLT = 19:39:2; meanUTC = 20:35:45; Dst = -37 nT; ap = 18nT  
b) SAT. = A; Y/M/D = 2021/10/14; Track n. = 27, U; meanLT = 19:28:12; meanUTC = 20:44:57; Dst = -17 nT; ap = 9nT  
c) SAT. = A; Y/M/D = 2021/10/17; Track n. = 12, D; meanLT = 7:3:15; meanUTC = 8:18:15; Dst = 0 nT; ap = 4nT  
d) SAT. = A; Y/M/D = 2021/10/17; Track n. = 27, U; meanLT = 19:12:6; meanUTC = 20:12:7; Dst = -44 nT; ap = 27nT



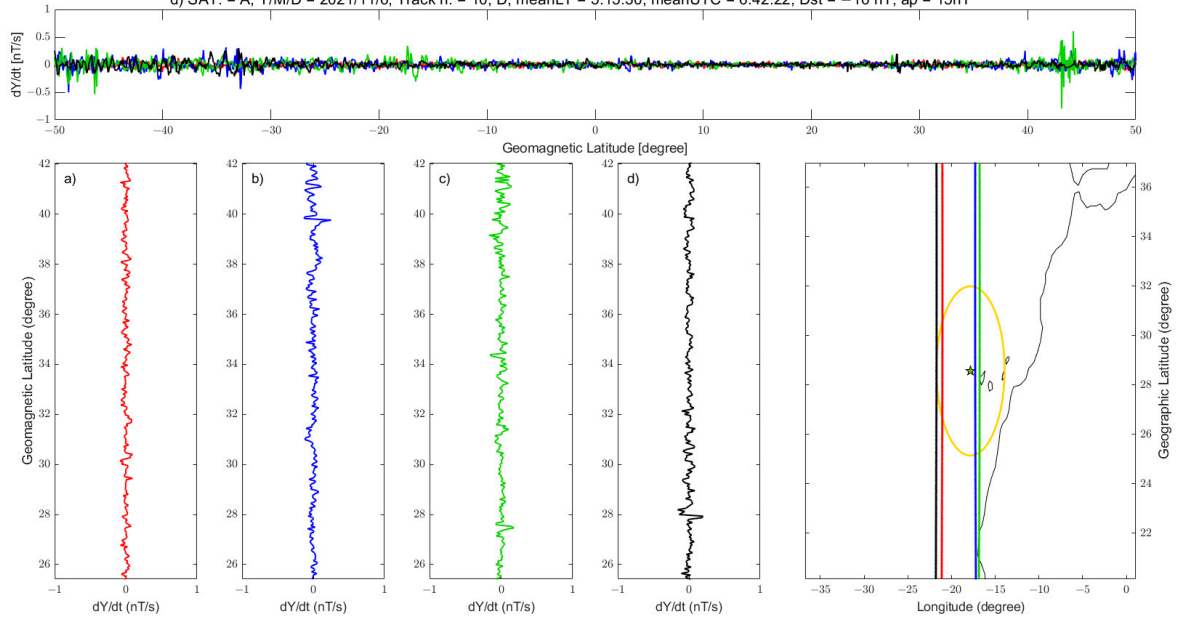
- a) SAT. = A; Y/M/D = 2021/10/19; Track n. = 27, U; meanLT = 19:1:16; meanUTC = 20:21:16; Dst = -21 nT; ap = 27nT  
b) SAT. = A; Y/M/D = 2021/10/20; Track n. = 11, D; meanLT = 6:47:9; meanUTC = 7:45:23; Dst = -6 nT; ap = 3nT  
c) SAT. = A; Y/M/D = 2021/10/22; Track n. = 11, D; meanLT = 6:36:18; meanUTC = 7:54:30; Dst = -8 nT; ap = 2nT  
d) SAT. = A; Y/M/D = 2021/10/22; Track n. = 26, U; meanLT = 18:45:10; meanUTC = 19:48:21; Dst = -2 nT; ap = 3nT



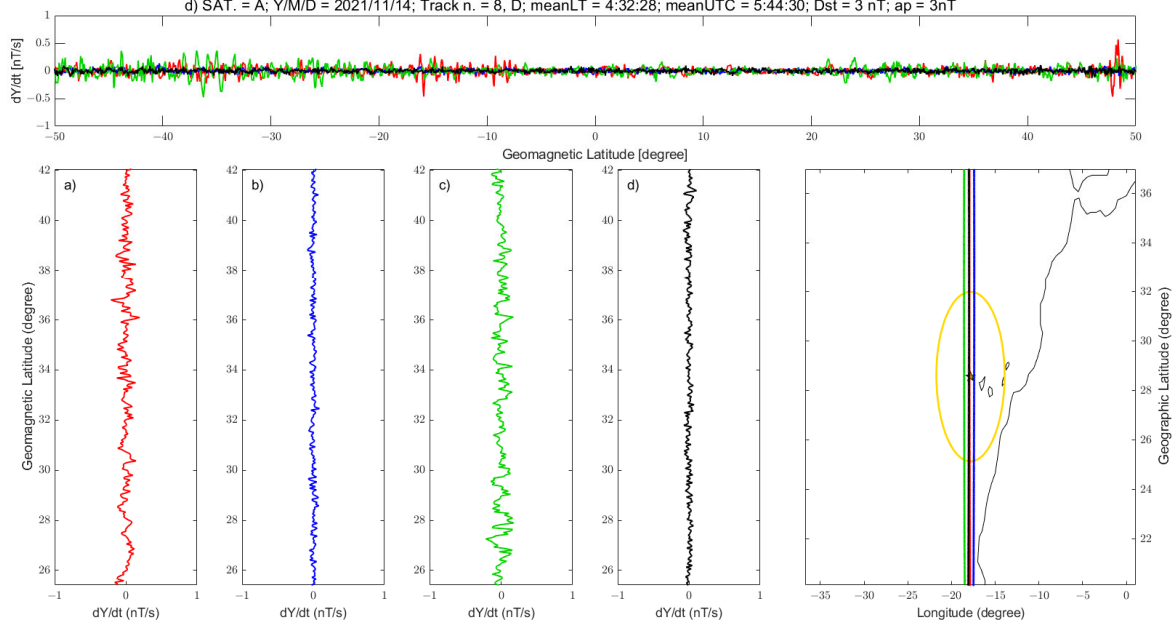
- a) SAT. = A; Y/M/D = 2021/10/27; Track n. = 11, D; meanLT = 6:9:22; meanUTC = 7:30:38; Dst = 5 nT; ap = 0nT  
b) SAT. = A; Y/M/D = 2021/10/27; Track n. = 26, U; meanLT = 18:18:14; meanUTC = 19:24:29; Dst = 3 nT; ap = 3nT  
c) SAT. = A; Y/M/D = 2021/10/29; Track n. = 26, U; meanLT = 18:7:23; meanUTC = 19:33:32; Dst = 10 nT; ap = 2nT  
d) SAT. = A; Y/M/D = 2021/10/30; Track n. = 10, D; meanLT = 5:53:17; meanUTC = 6:57:37; Dst = -9 nT; ap = 9nT



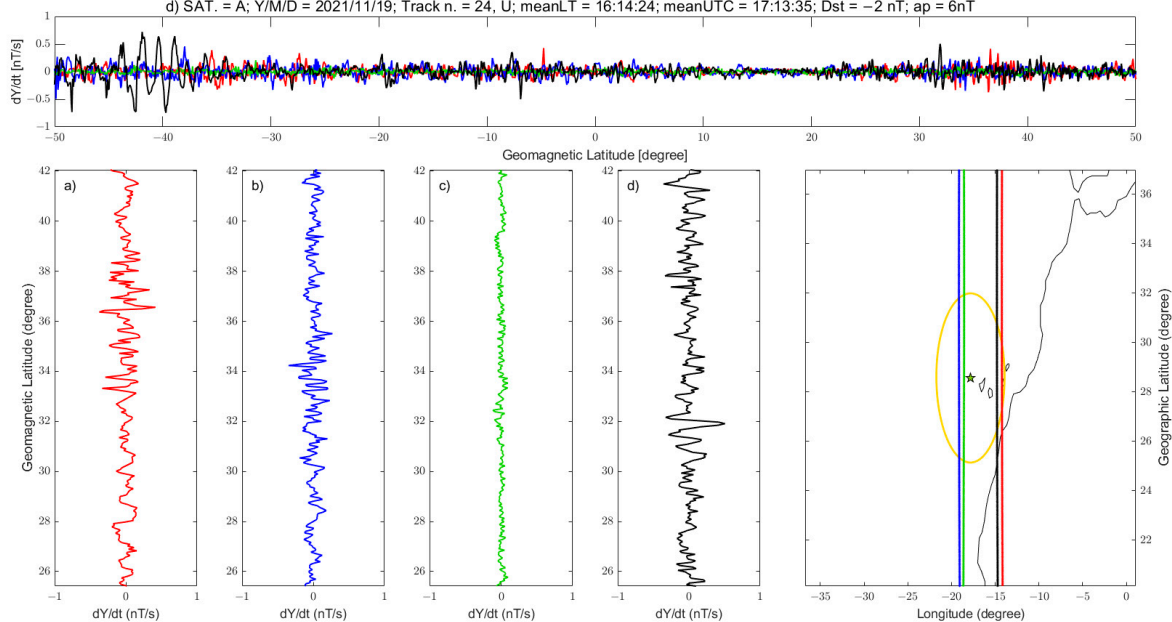
- a) SAT. = A; Y/M/D = 2021/11/1; Track n. = 10, D; meanLT = 5:42:26; meanUTC = 7:6:37; Dst = -8 nT; ap = 4nT  
b) SAT. = A; Y/M/D = 2021/11/1; Track n. = 25, U; meanLT = 17:51:18; meanUTC = 19:0:27; Dst = 18 nT; ap = 12nT  
c) SAT. = A; Y/M/D = 2021/11/4; Track n. = 9, D; meanLT = 5:26:20; meanUTC = 6:33:28; Dst = -67 nT; ap = 132nT  
d) SAT. = A; Y/M/D = 2021/11/6; Track n. = 10, D; meanLT = 5:15:30; meanUTC = 6:42:22; Dst = -16 nT; ap = 15nT



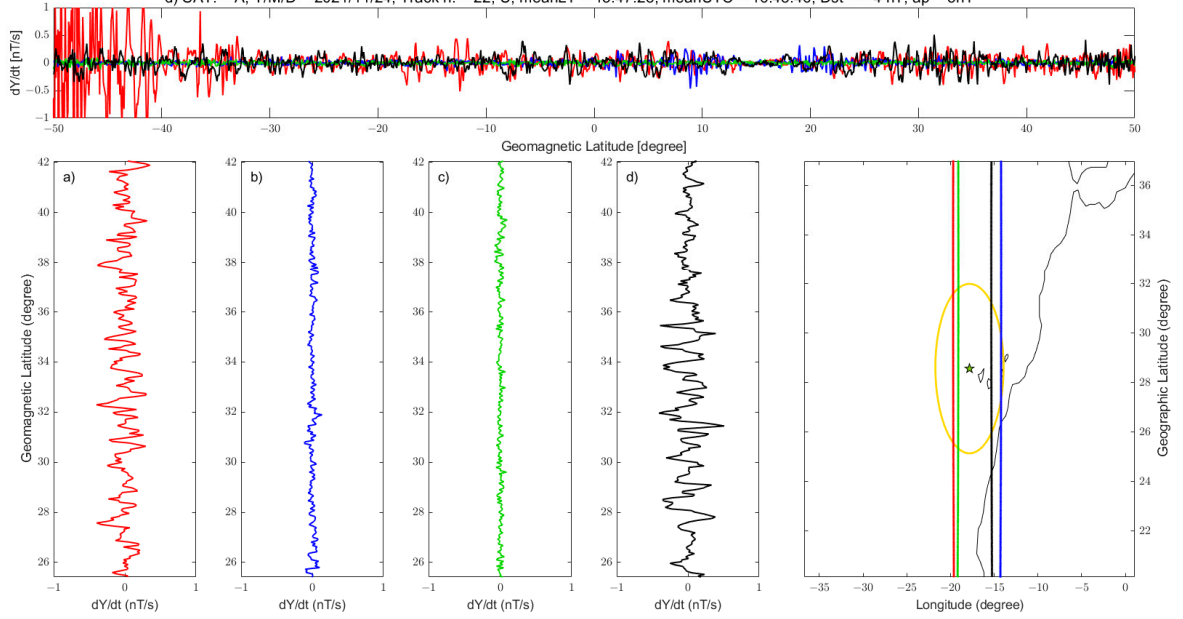
- a) SAT. = A; Y/M/D = 2021/11/6; Track n. = 25, U; meanLT = 17:24:22; meanUTC = 18:36:10; Dst = -30 nT; ap = 15nT  
b) SAT. = A; Y/M/D = 2021/11/9; Track n. = 9, D; meanLT = 4:59:24; meanUTC = 6:9:4; Dst = -15 nT; ap = 5nT  
c) SAT. = A; Y/M/D = 2021/11/11; Track n. = 24, U; meanLT = 16:57:26; meanUTC = 18:11:40; Dst = 2 nT; ap = 5nT  
d) SAT. = A; Y/M/D = 2021/11/14; Track n. = 8, D; meanLT = 4:32:28; meanUTC = 5:44:30; Dst = 3 nT; ap = 3nT



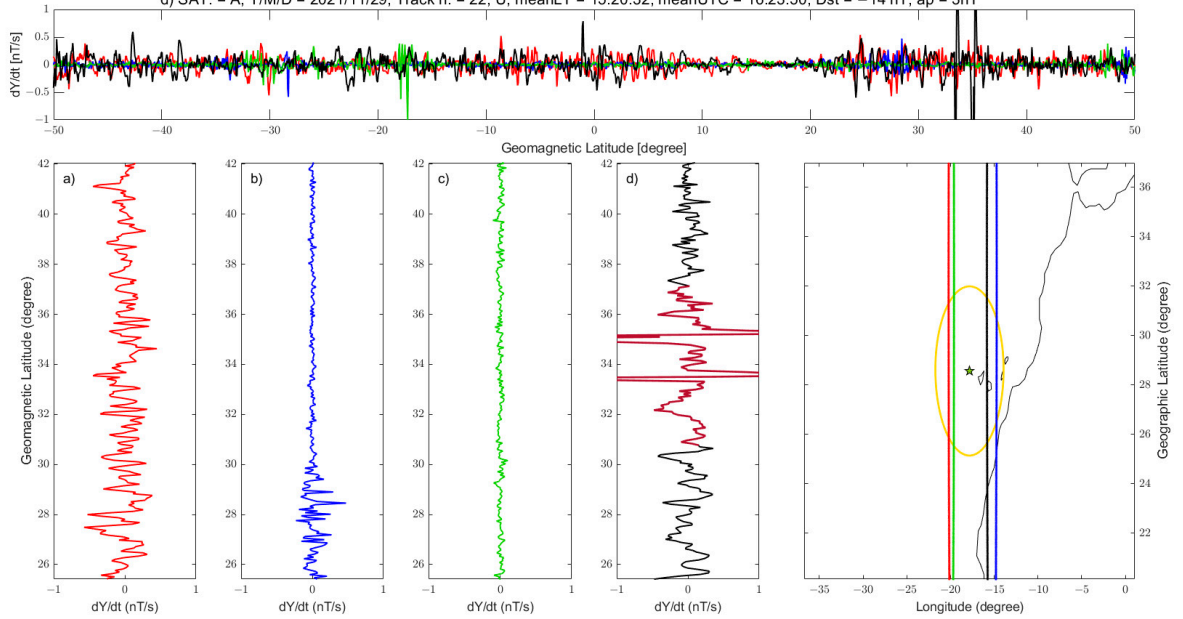
- a) SAT. = A; Y/M/D = 2021/11/14; Track n. = 24, U; meanLT = 16:41:20; meanUTC = 17:38:16; Dst = -4 nT; ap = 3nT  
b) SAT. = A; Y/M/D = 2021/11/16; Track n. = 24, U; meanLT = 16:30:29; meanUTC = 17:47:3; Dst = -8 nT; ap = 9nT  
c) SAT. = A; Y/M/D = 2021/11/19; Track n. = 8, D; meanLT = 4:5:32; meanUTC = 5:19:49; Dst = 4 nT; ap = 2nT  
d) SAT. = A; Y/M/D = 2021/11/19; Track n. = 24, U; meanLT = 16:14:24; meanUTC = 17:13:35; Dst = -2 nT; ap = 6nT



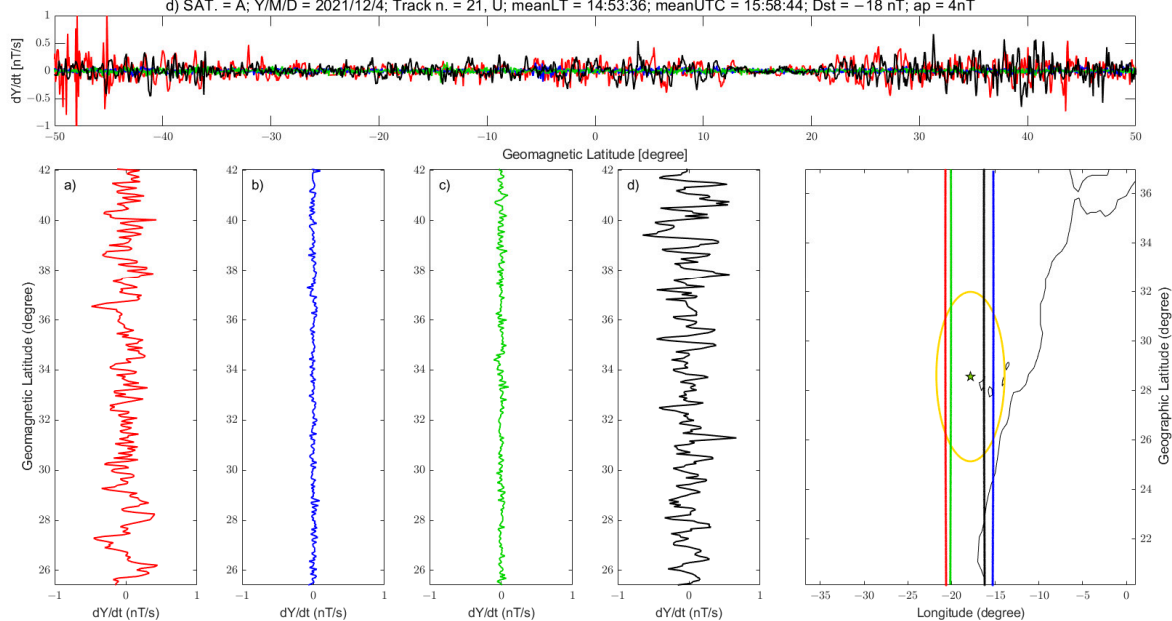
- a) SAT. = A; Y/M/D = 2021/11/21; Track n. = 23, U; meanLT = 16:3:33; meanUTC = 17:22:19; Dst = -3 nT; ap = 18nT  
b) SAT. = A; Y/M/D = 2021/11/22; Track n. = 7, D; meanLT = 3:49:27; meanUTC = 4:46:19; Dst = 2 nT; ap = 15nT  
c) SAT. = A; Y/M/D = 2021/11/24; Track n. = 7, D; meanLT = 3:38:36; meanUTC = 4:55:1; Dst = 1 nT; ap = 6nT  
d) SAT. = A; Y/M/D = 2021/11/24; Track n. = 22, U; meanLT = 15:47:28; meanUTC = 16:48:46; Dst = -4 nT; ap = 3nT



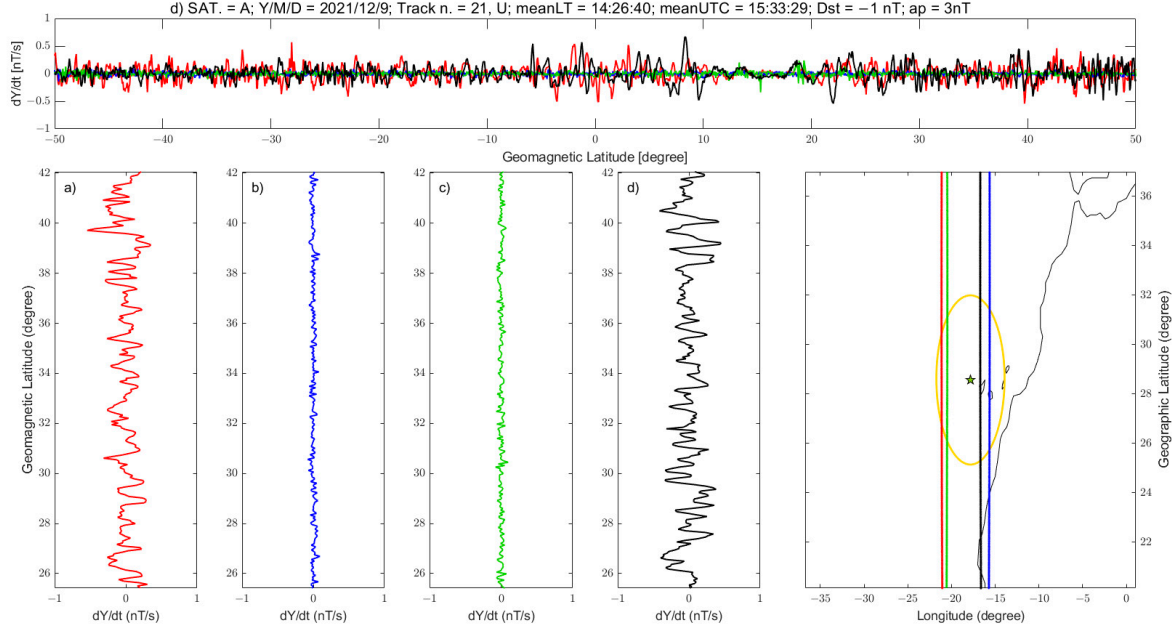
- a) SAT. = A; Y/M/D = 2021/11/26; Track n. = 23, U; meanLT = 15:36:37; meanUTC = 16:57:27; Dst = 4 nT; ap = 5nT  
b) SAT. = A; Y/M/D = 2021/11/27; Track n. = 7, D; meanLT = 3:22:31; meanUTC = 4:21:26; Dst = 7 nT; ap = 2nT  
c) SAT. = A; Y/M/D = 2021/11/29; Track n. = 7, D; meanLT = 3:11:40; meanUTC = 4:30:6; Dst = -20 nT; ap = 18nT  
d) SAT. = A; Y/M/D = 2021/11/29; Track n. = 22, U; meanLT = 15:20:32; meanUTC = 16:23:50; Dst = -14 nT; ap = 3nT



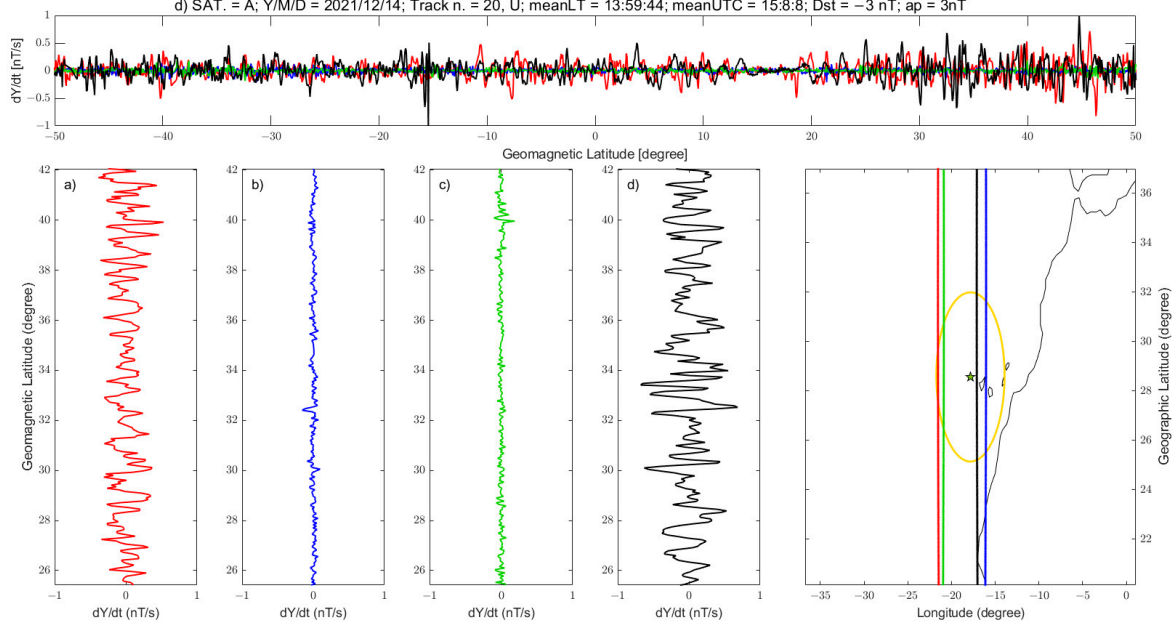
- a) SAT. = A; Y/M/D = 2021/12/1; Track n. = 22, U; meanLT = 15:9:41; meanUTC = 16:32:27; Dst = -28 nT; ap = 18nT  
b) SAT. = A; Y/M/D = 2021/12/2; Track n. = 6, D; meanLT = 2:55:35; meanUTC = 3:56:26; Dst = -26 nT; ap = 6nT  
c) SAT. = A; Y/M/D = 2021/12/4; Track n. = 6, D; meanLT = 2:44:44; meanUTC = 4:5:0; Dst = -17 nT; ap = 9nT  
d) SAT. = A; Y/M/D = 2021/12/4; Track n. = 21, U; meanLT = 14:53:36; meanUTC = 15:58:44; Dst = -18 nT; ap = 4nT



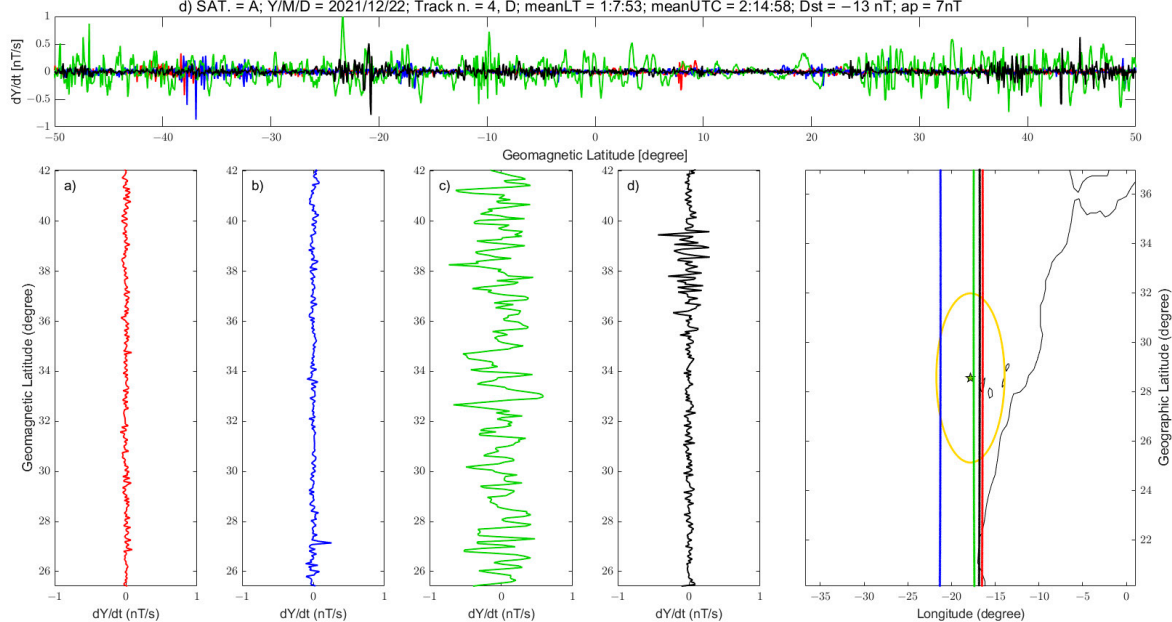
- a) SAT. = A; Y/M/D = 2021/12/6; Track n. = 21, U; meanLT = 14:42:45; meanUTC = 16:7:17; Dst = -9 nT; ap = 12nT  
b) SAT. = A; Y/M/D = 2021/12/7; Track n. = 6, D; meanLT = 2:28:39; meanUTC = 3:31:15; Dst = -7 nT; ap = 5nT  
c) SAT. = A; Y/M/D = 2021/12/9; Track n. = 6, D; meanLT = 2:17:49; meanUTC = 3:39:46; Dst = -10 nT; ap = 3nT  
d) SAT. = A; Y/M/D = 2021/12/9; Track n. = 21, U; meanLT = 14:26:40; meanUTC = 15:33:29; Dst = -1 nT; ap = 3nT

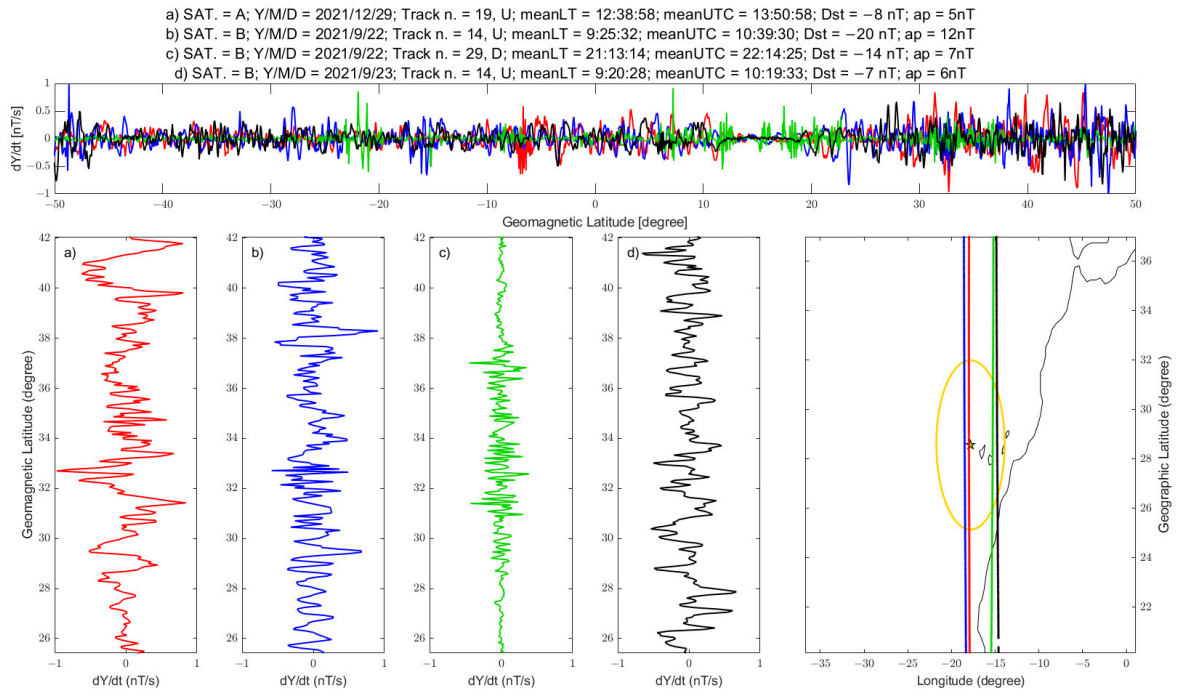
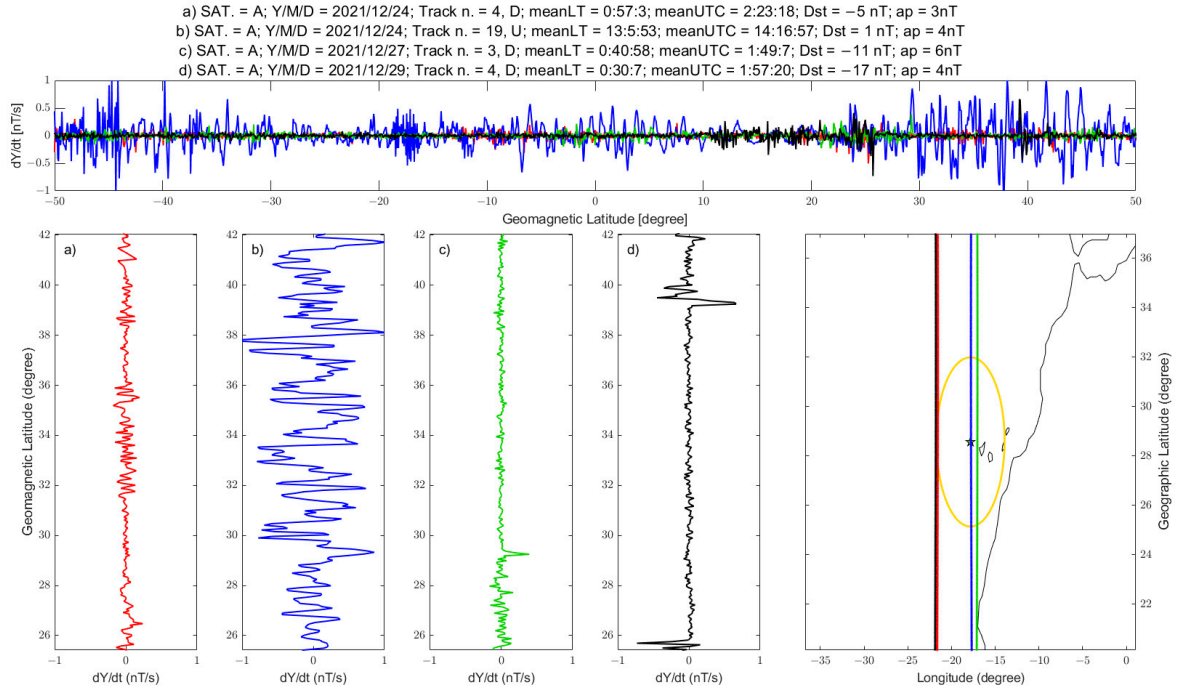


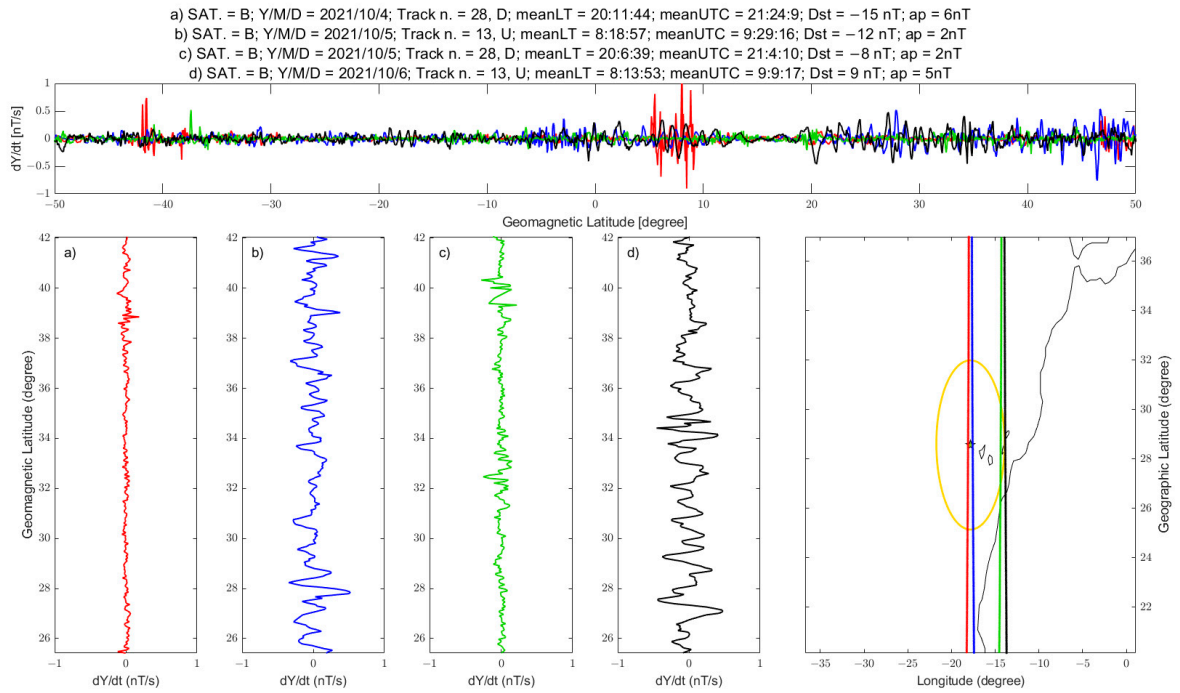
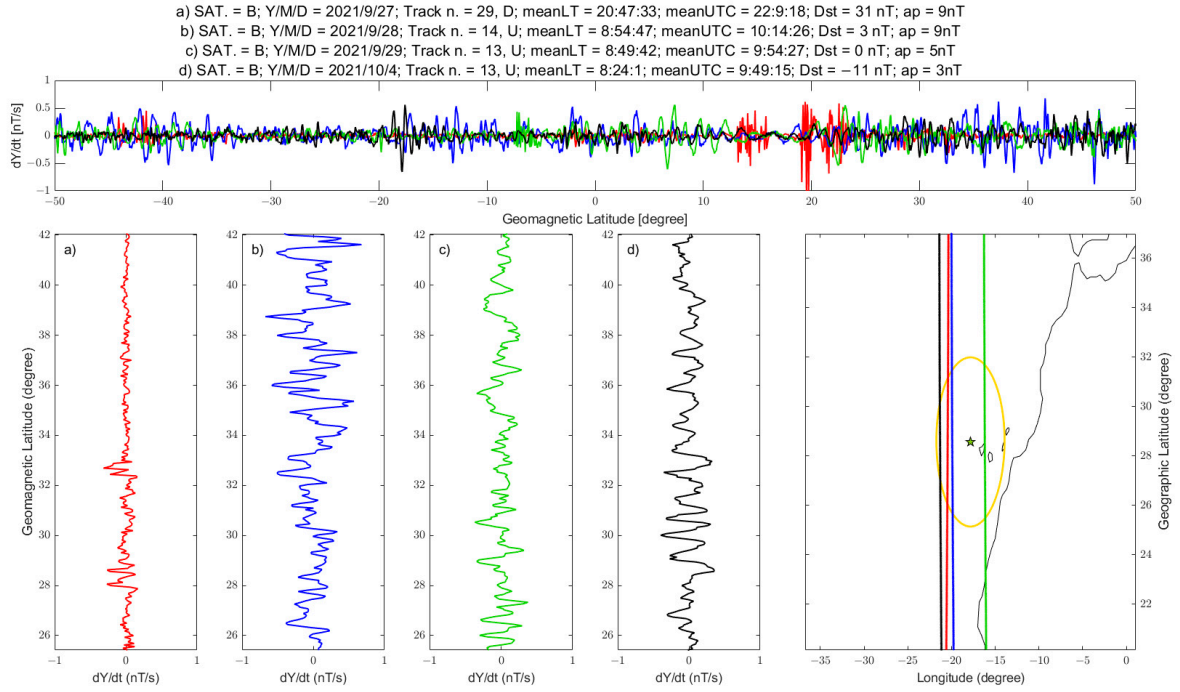
- a) SAT. = A; Y/M/D = 2021/12/11; Track n. = 21, U; meanLT = 14:15:50; meanUTC = 15:41:60; Dst = 1 nT; ap = 0nT  
b) SAT. = A; Y/M/D = 2021/12/12; Track n. = 5, D; meanLT = 2:1:44; meanUTC = 3:5:57; Dst = 1 nT; ap = 4nT  
c) SAT. = A; Y/M/D = 2021/12/14; Track n. = 5, D; meanLT = 1:50:53; meanUTC = 3:14:26; Dst = 4 nT; ap = 5nT  
d) SAT. = A; Y/M/D = 2021/12/14; Track n. = 20, U; meanLT = 13:59:44; meanUTC = 15:8:8; Dst = -3 nT; ap = 3nT



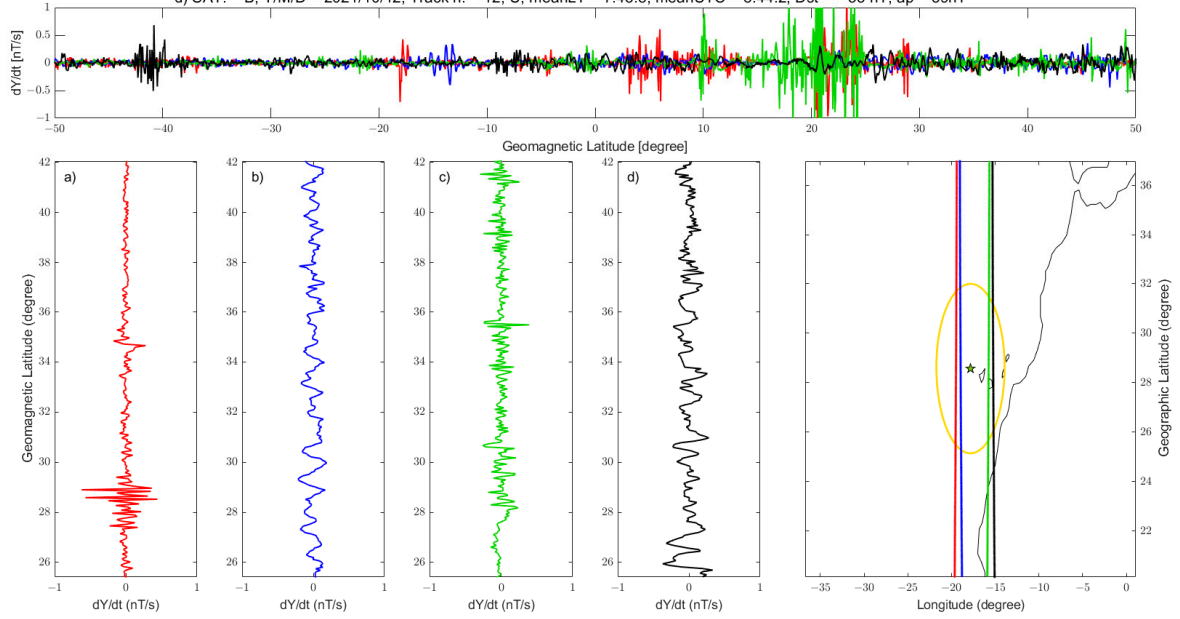
- a) SAT. = A; Y/M/D = 2021/12/17; Track n. = 4, D; meanLT = 1:34:48; meanUTC = 2:40:33; Dst = -3 nT; ap = 6nT  
b) SAT. = A; Y/M/D = 2021/12/19; Track n. = 5, D; meanLT = 1:23:58; meanUTC = 2:48:59; Dst = 7 nT; ap = 2nT  
c) SAT. = A; Y/M/D = 2021/12/19; Track n. = 20, U; meanLT = 13:32:49; meanUTC = 14:42:40; Dst = 9 nT; ap = 7nT  
d) SAT. = A; Y/M/D = 2021/12/22; Track n. = 4, D; meanLT = 1:7:53; meanUTC = 2:14:58; Dst = -13 nT; ap = 7nT



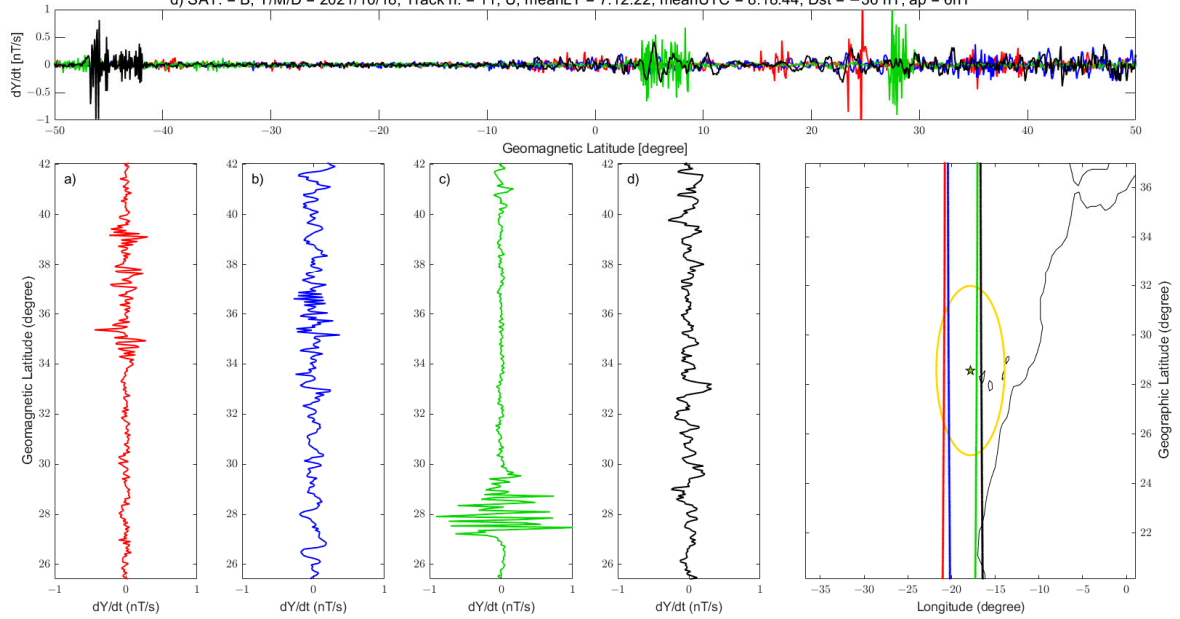


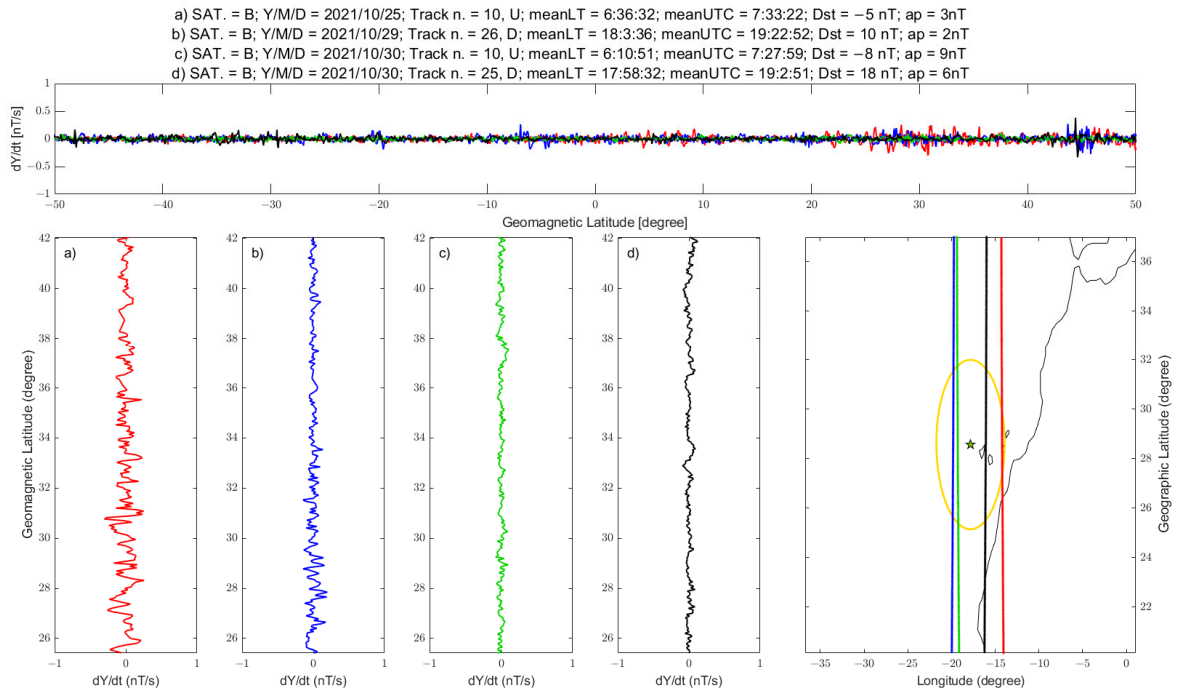
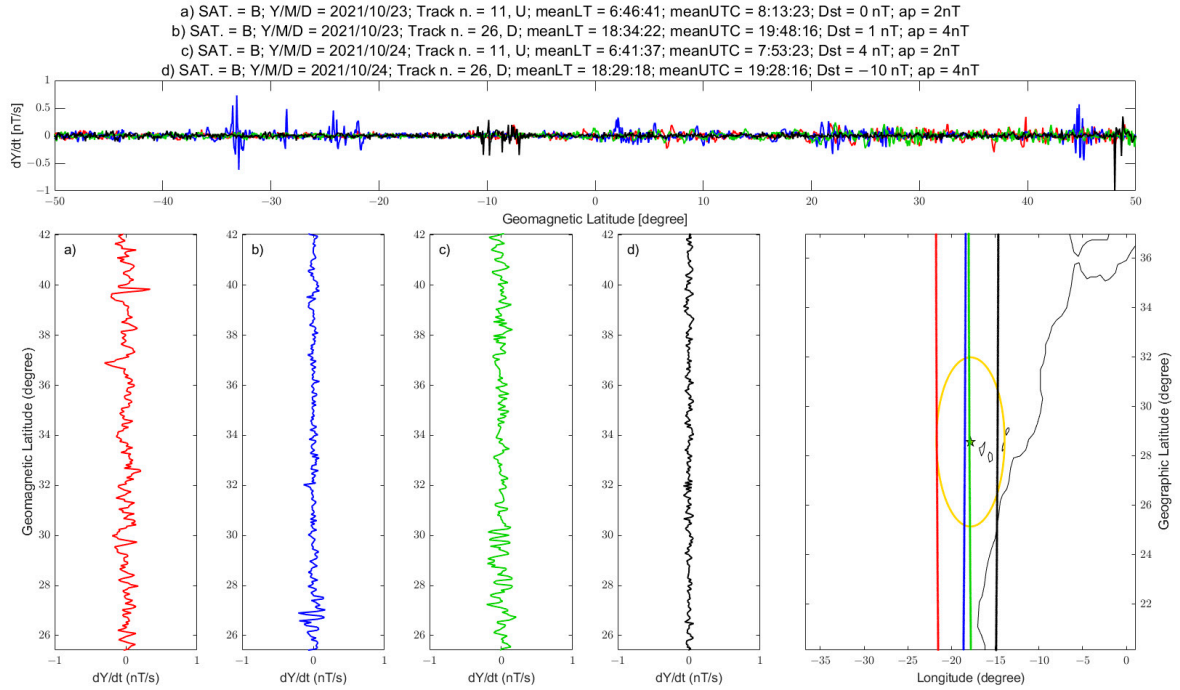


- a) SAT. = B; Y/M/D = 2021/10/10; Track n. = 28, D; meanLT = 19:40:58; meanUTC = 20:58:55; Dst = -12 nT; ap = 9nT  
b) SAT. = B; Y/M/D = 2021/10/11; Track n. = 12, U; meanLT = 7:48:12; meanUTC = 9:4:2; Dst = -18 nT; ap = 12nT  
c) SAT. = B; Y/M/D = 2021/10/11; Track n. = 27, D; meanLT = 19:35:54; meanUTC = 20:38:56; Dst = -26 nT; ap = 18nT  
d) SAT. = B; Y/M/D = 2021/10/12; Track n. = 12, U; meanLT = 7:43:8; meanUTC = 8:44:2; Dst = -53 nT; ap = 39nT

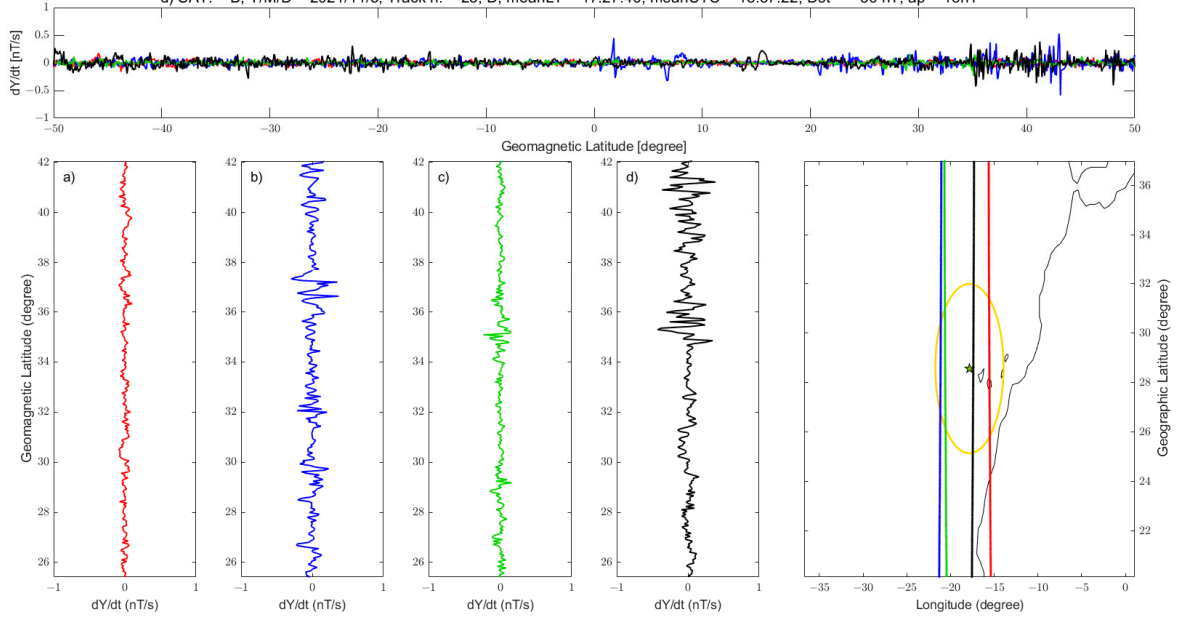


- a) SAT. = B; Y/M/D = 2021/10/16; Track n. = 27, D; meanLT = 19:10:12; meanUTC = 20:33:37; Dst = -3 nT; ap = 4nT  
b) SAT. = B; Y/M/D = 2021/10/17; Track n. = 12, U; meanLT = 7:17:27; meanUTC = 8:38:44; Dst = 0 nT; ap = 4nT  
c) SAT. = B; Y/M/D = 2021/10/17; Track n. = 27, D; meanLT = 19:5:8; meanUTC = 20:13:37; Dst = -45 nT; ap = 27nT  
d) SAT. = B; Y/M/D = 2021/10/18; Track n. = 11, U; meanLT = 7:12:22; meanUTC = 8:18:44; Dst = -36 nT; ap = 6nT

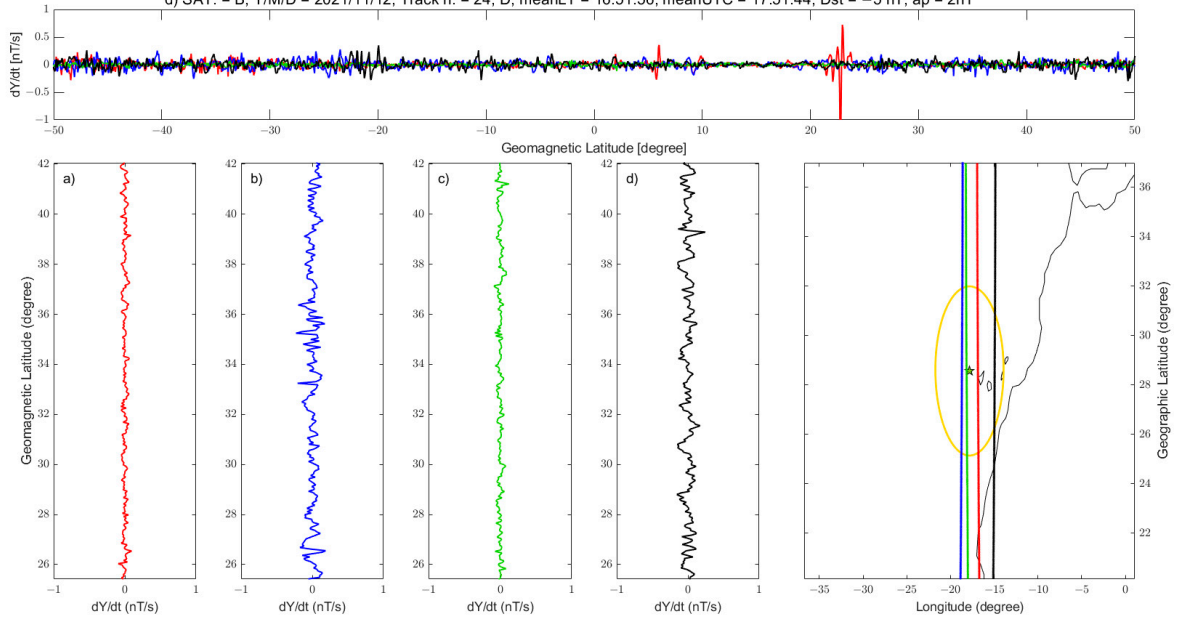




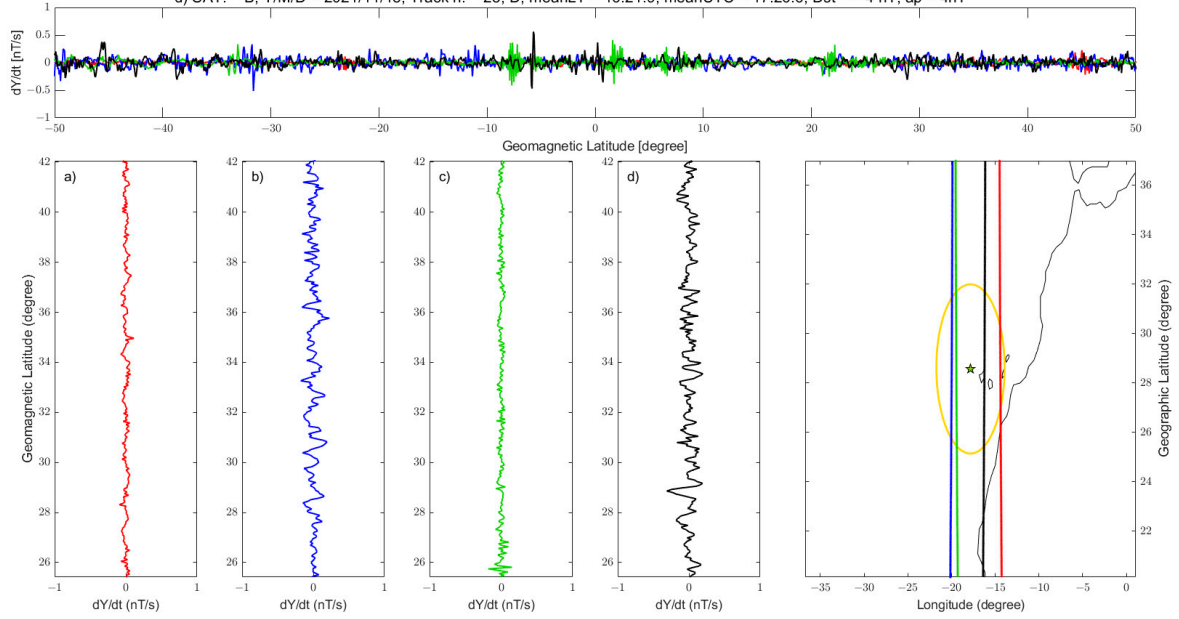
- a) SAT. = B; Y/M/D = 2021/10/31; Track n. = 10, U; meanLT = 6:5:47; meanUTC = 7:7:58; Dst = -25 nT; ap = 2nT  
b) SAT. = B; Y/M/D = 2021/11/4; Track n. = 25, D; meanLT = 17:32:50; meanUTC = 18:57:24; Dst = -60 nT; ap = 6nT  
c) SAT. = B; Y/M/D = 2021/11/5; Track n. = 10, U; meanLT = 5:40:5; meanUTC = 7:2:30; Dst = -6 nT; ap = 6nT  
d) SAT. = B; Y/M/D = 2021/11/5; Track n. = 25, D; meanLT = 17:27:46; meanUTC = 18:37:22; Dst = -36 nT; ap = 15nT



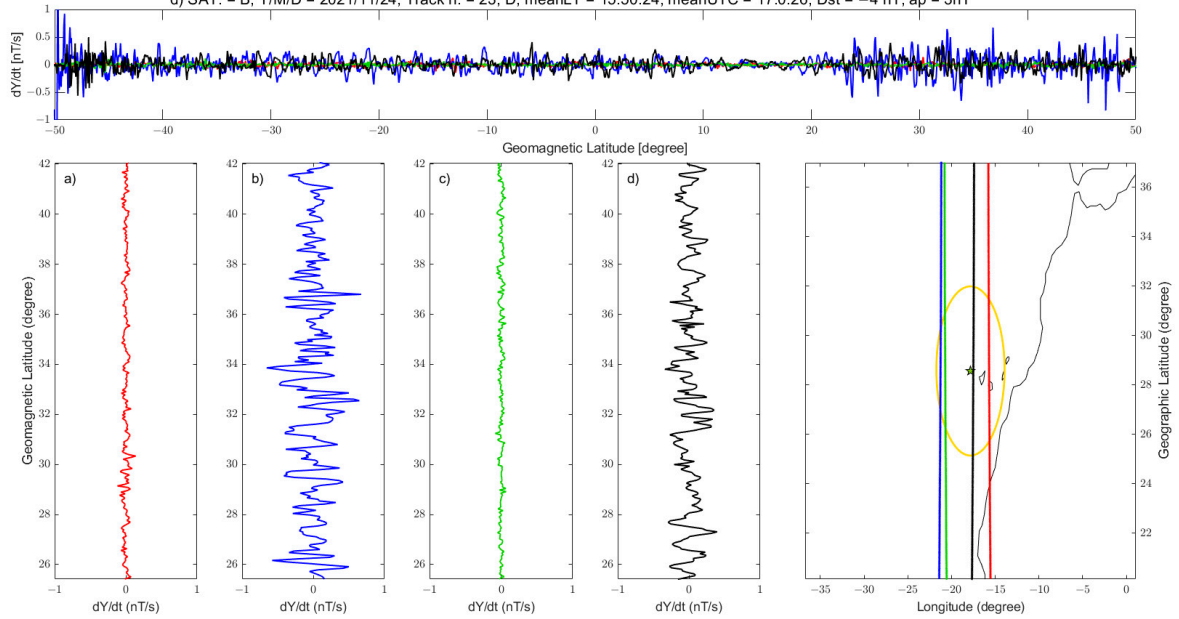
- a) SAT. = B; Y/M/D = 2021/11/6; Track n. = 9, U; meanLT = 5:35:1; meanUTC = 6:42:28; Dst = -16 nT; ap = 15nT  
b) SAT. = B; Y/M/D = 2021/11/11; Track n. = 24, D; meanLT = 16:57:0; meanUTC = 18:11:47; Dst = 1 nT; ap = 3nT  
c) SAT. = B; Y/M/D = 2021/11/12; Track n. = 9, U; meanLT = 5:4:15; meanUTC = 6:16:53; Dst = -6 nT; ap = 6nT  
d) SAT. = B; Y/M/D = 2021/11/12; Track n. = 24, D; meanLT = 16:51:56; meanUTC = 17:51:44; Dst = -5 nT; ap = 2nT

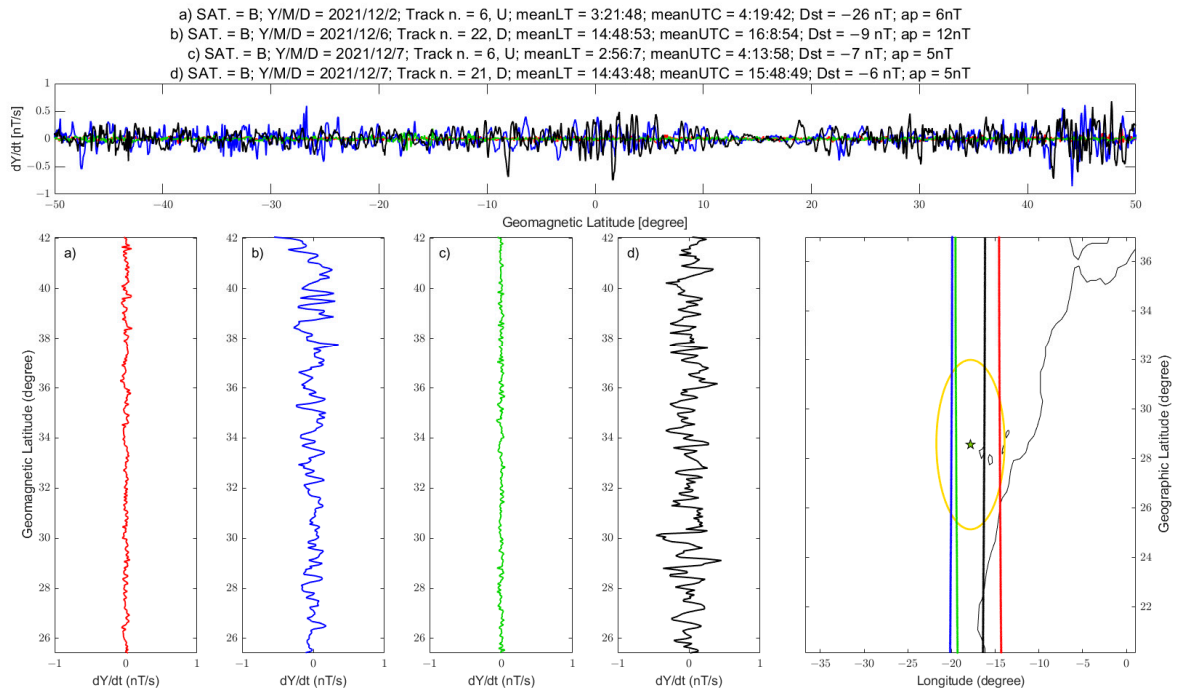
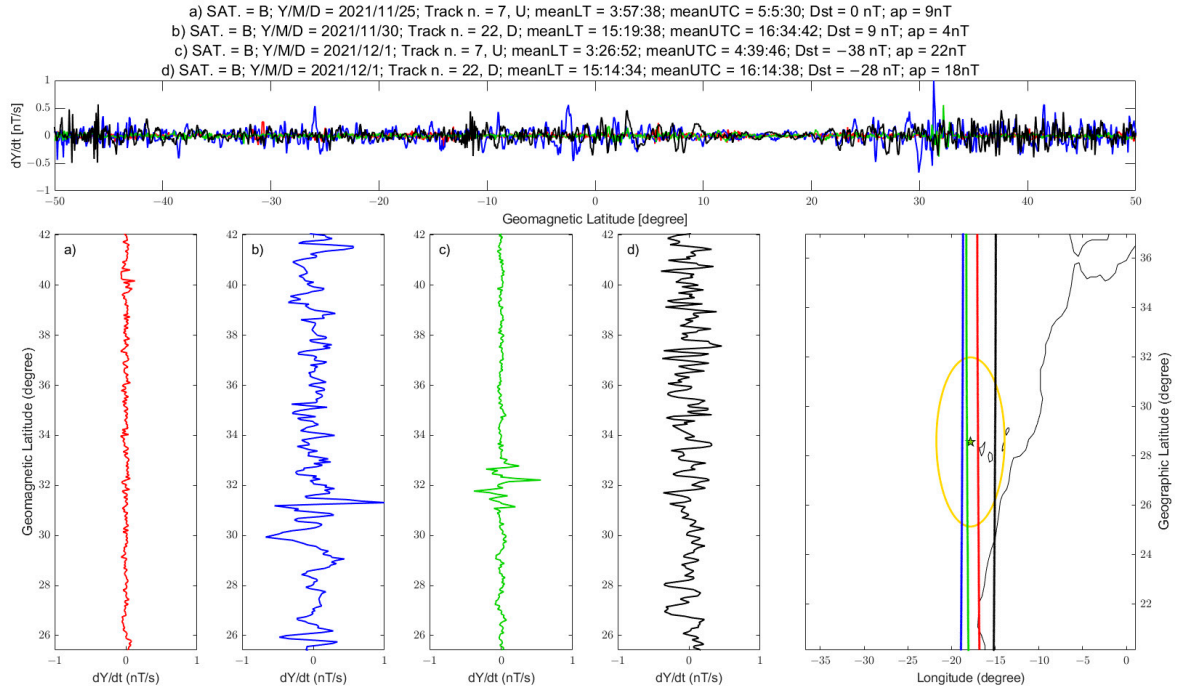


- a) SAT. = B; Y/M/D = 2021/11/13; Track n. = 8, U; meanLT = 4:59:10; meanUTC = 5:56:50; Dst = -1 nT; ap = 2nT  
b) SAT. = B; Y/M/D = 2021/11/17; Track n. = 24, D; meanLT = 16:26:14; meanUTC = 17:46:10; Dst = -5 nT; ap = 7nT  
c) SAT. = B; Y/M/D = 2021/11/18; Track n. = 8, U; meanLT = 4:33:29; meanUTC = 5:51:15; Dst = -2 nT; ap = 9nT  
d) SAT. = B; Y/M/D = 2021/11/18; Track n. = 23, D; meanLT = 16:21:9; meanUTC = 17:26:6; Dst = -4 nT; ap = 4nT

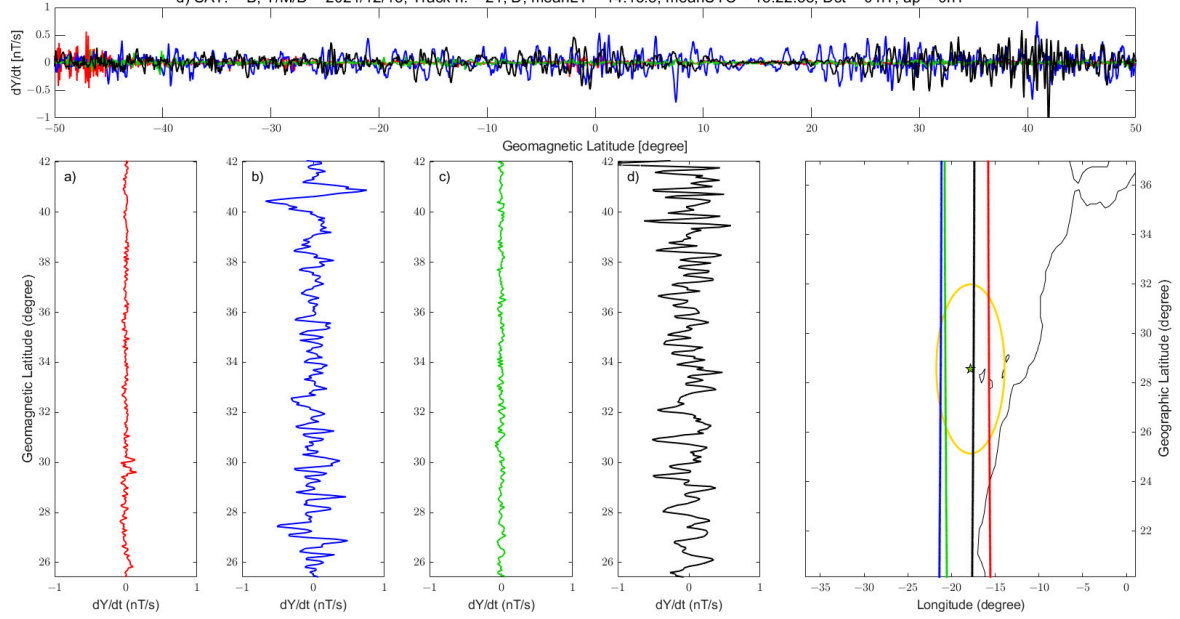


- a) SAT. = B; Y/M/D = 2021/11/19; Track n. = 8, U; meanLT = 4:28:24; meanUTC = 5:31:11; Dst = 4 nT; ap = 2nT  
b) SAT. = B; Y/M/D = 2021/11/23; Track n. = 23, D; meanLT = 15:55:28; meanUTC = 17:20:29; Dst = -13 nT; ap = 12nT  
c) SAT. = B; Y/M/D = 2021/11/24; Track n. = 8, U; meanLT = 4:2:43; meanUTC = 5:25:34; Dst = 1 nT; ap = 6nT  
d) SAT. = B; Y/M/D = 2021/11/24; Track n. = 23, D; meanLT = 15:50:24; meanUTC = 17:0:26; Dst = -4 nT; ap = 3nT

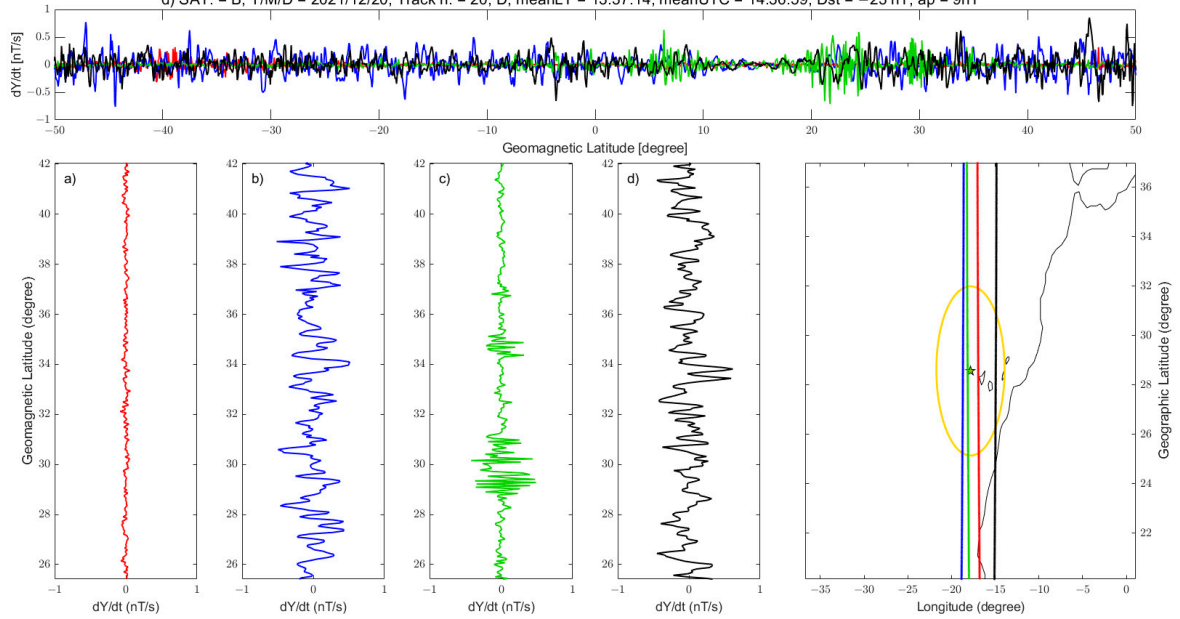


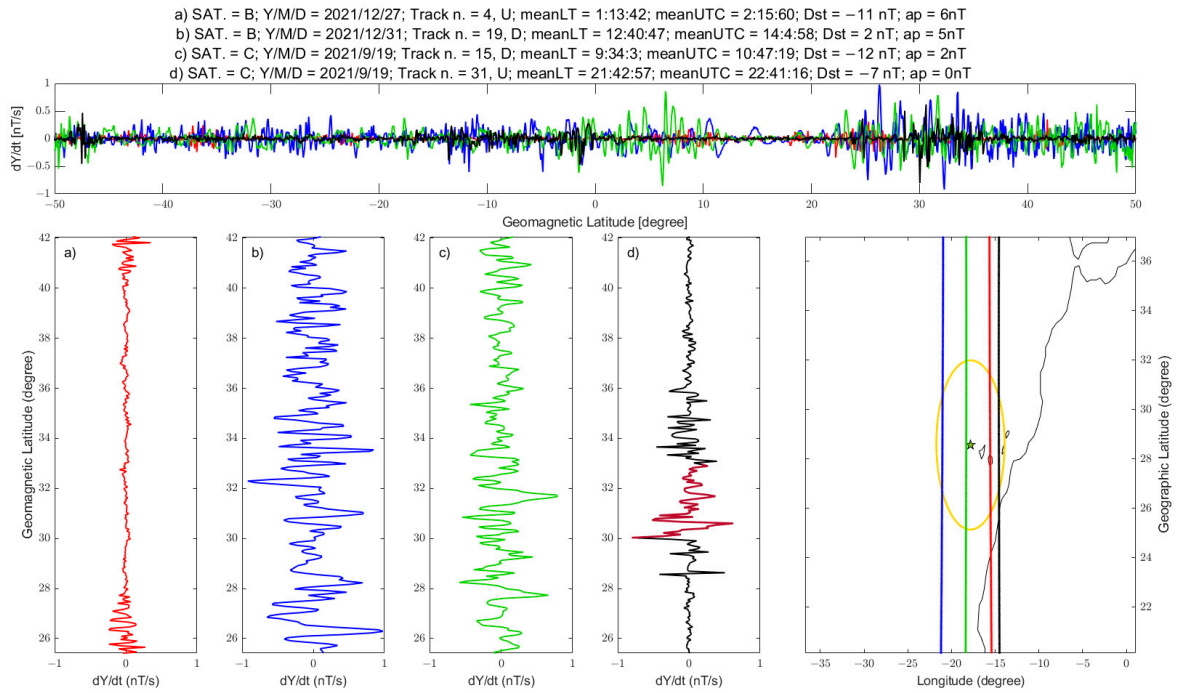
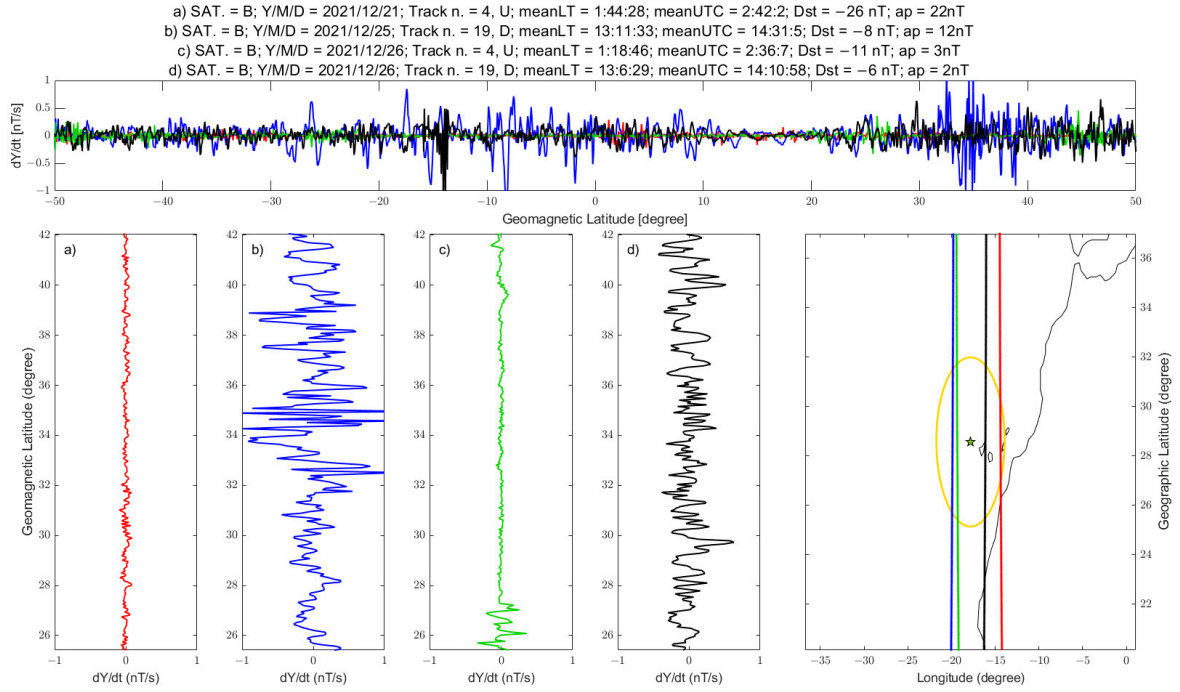


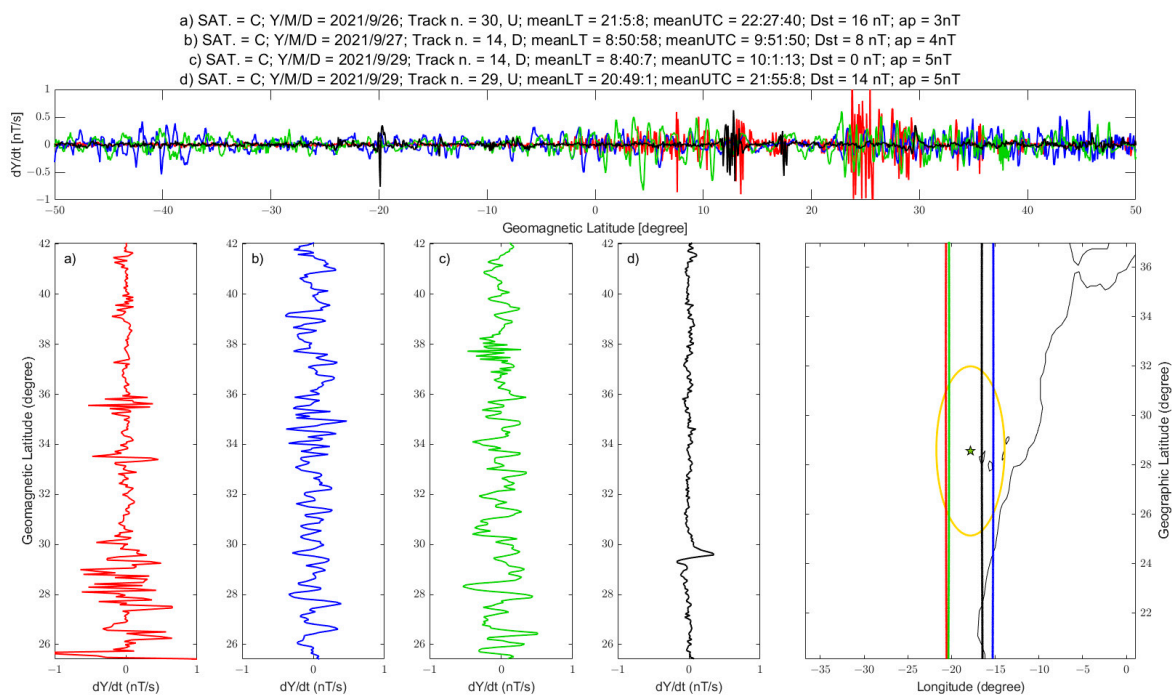
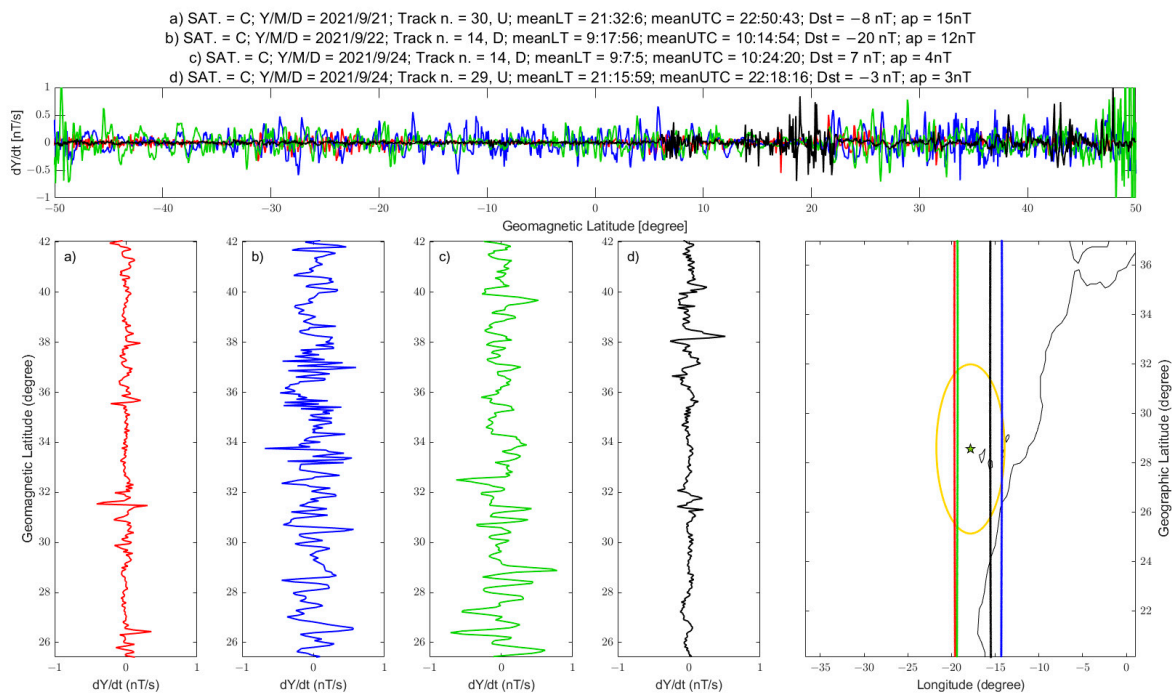
- a) SAT. = B; Y/M/D = 2021/12/8; Track n. = 6, U; meanLT = 2:51:2; meanUTC = 3:53:53; Dst = -4 nT; ap = 3nT  
b) SAT. = B; Y/M/D = 2021/12/12; Track n. = 21, D; meanLT = 14:18:7; meanUTC = 15:43:4; Dst = -1 nT; ap = 4nT  
c) SAT. = B; Y/M/D = 2021/12/13; Track n. = 6, U; meanLT = 2:25:21; meanUTC = 3:48:7; Dst = 5 nT; ap = 12nT  
d) SAT. = B; Y/M/D = 2021/12/13; Track n. = 21, D; meanLT = 14:13:3; meanUTC = 15:22:58; Dst = 0 nT; ap = 0nT

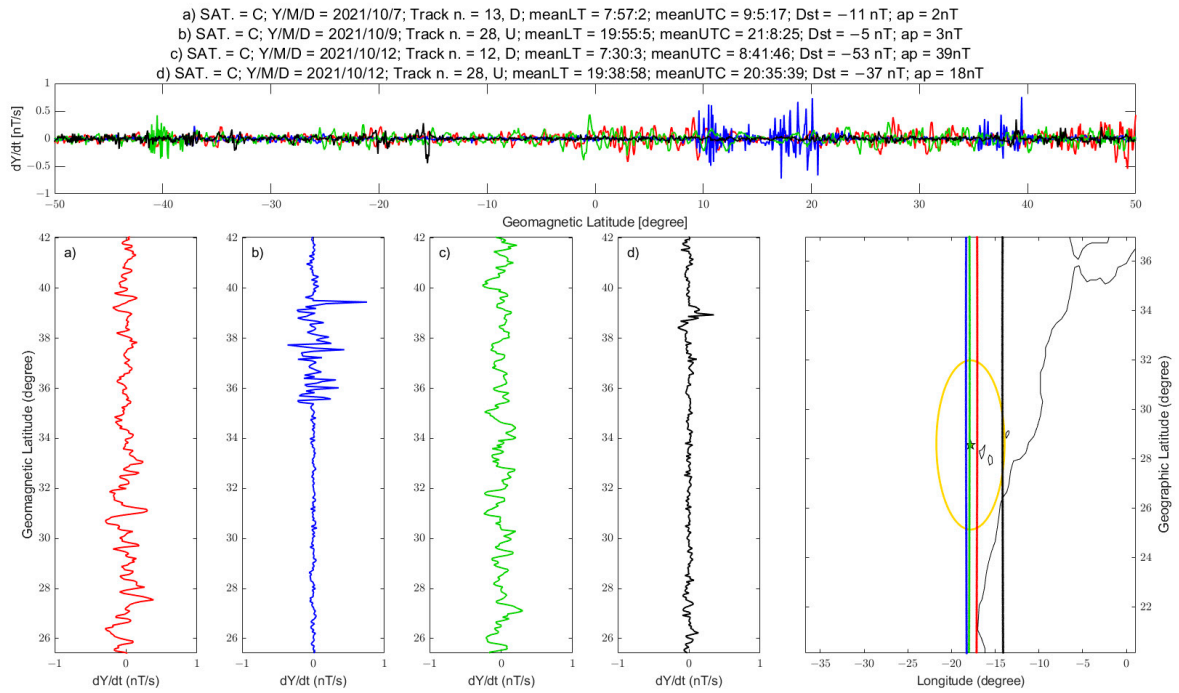
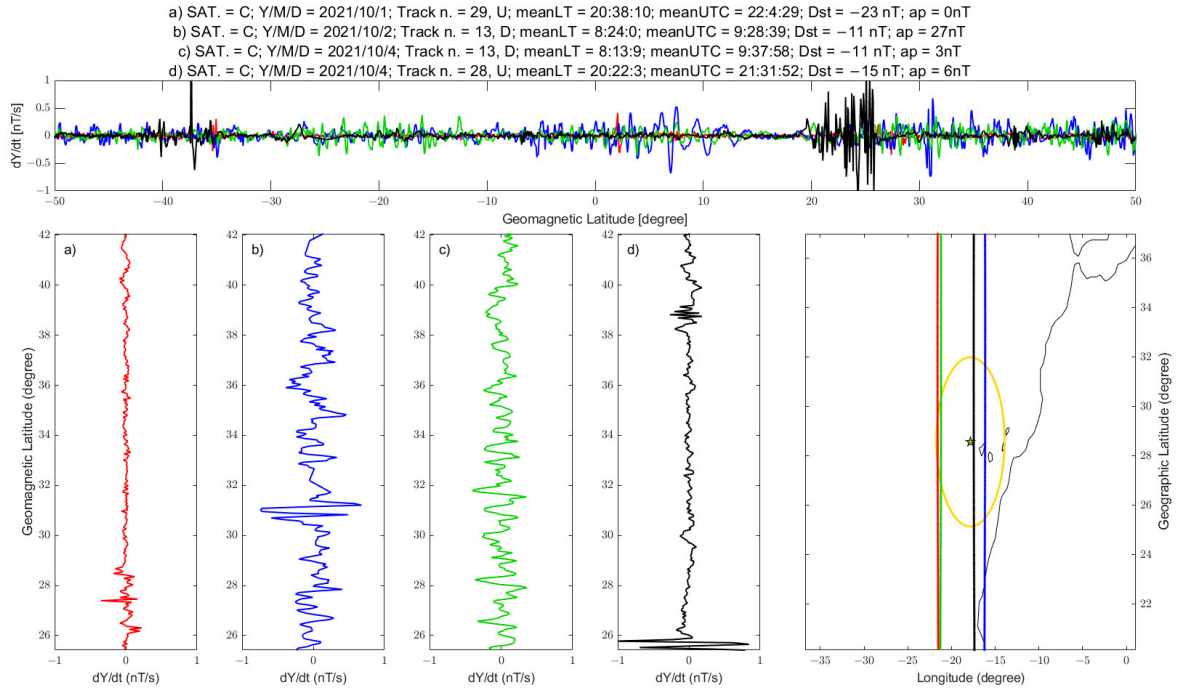


- a) SAT. = B; Y/M/D = 2021/12/14; Track n. = 5, U; meanLT = 2:20:17; meanUTC = 3:28:2; Dst = 4 nT; ap = 5nT  
b) SAT. = B; Y/M/D = 2021/12/19; Track n. = 20, D; meanLT = 13:42:18; meanUTC = 14:57:5; Dst = 9 nT; ap = 7nT  
c) SAT. = B; Y/M/D = 2021/12/20; Track n. = 5, U; meanLT = 1:49:32; meanUTC = 3:2:8; Dst = -29 nT; ap = 22nT  
d) SAT. = B; Y/M/D = 2021/12/20; Track n. = 20, D; meanLT = 13:37:14; meanUTC = 14:36:59; Dst = -23 nT; ap = 9nT

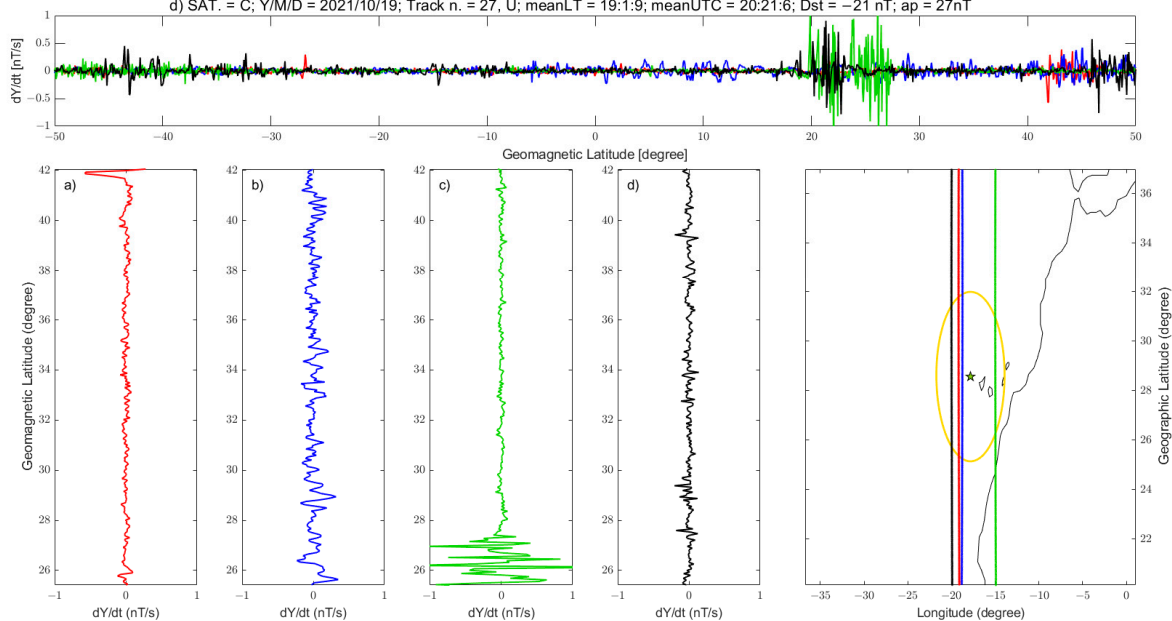




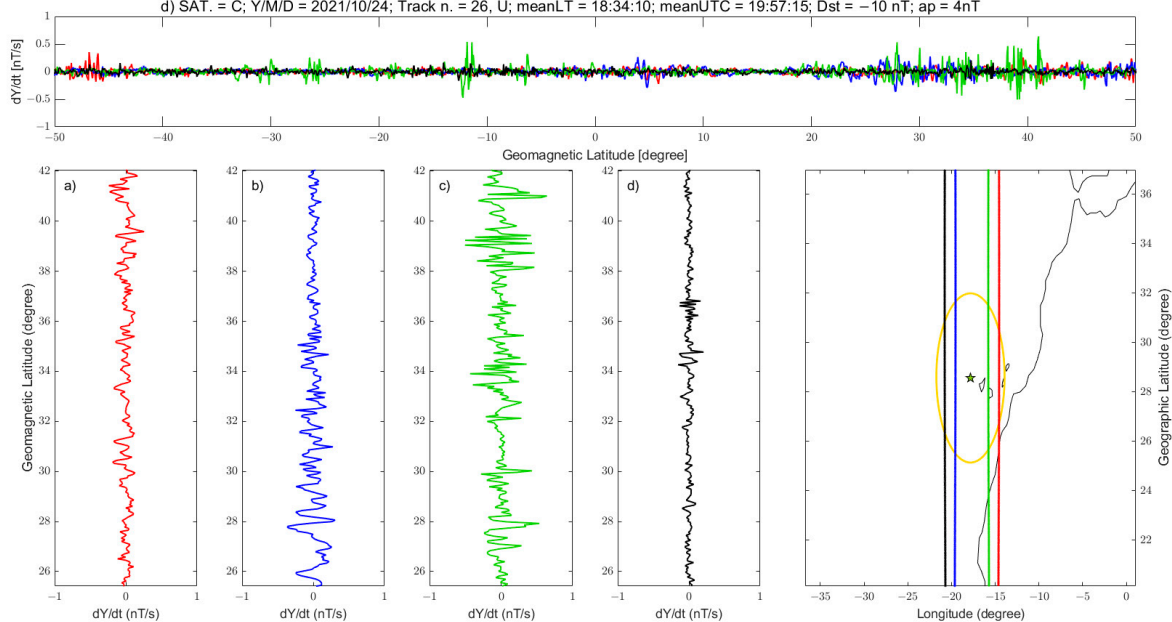




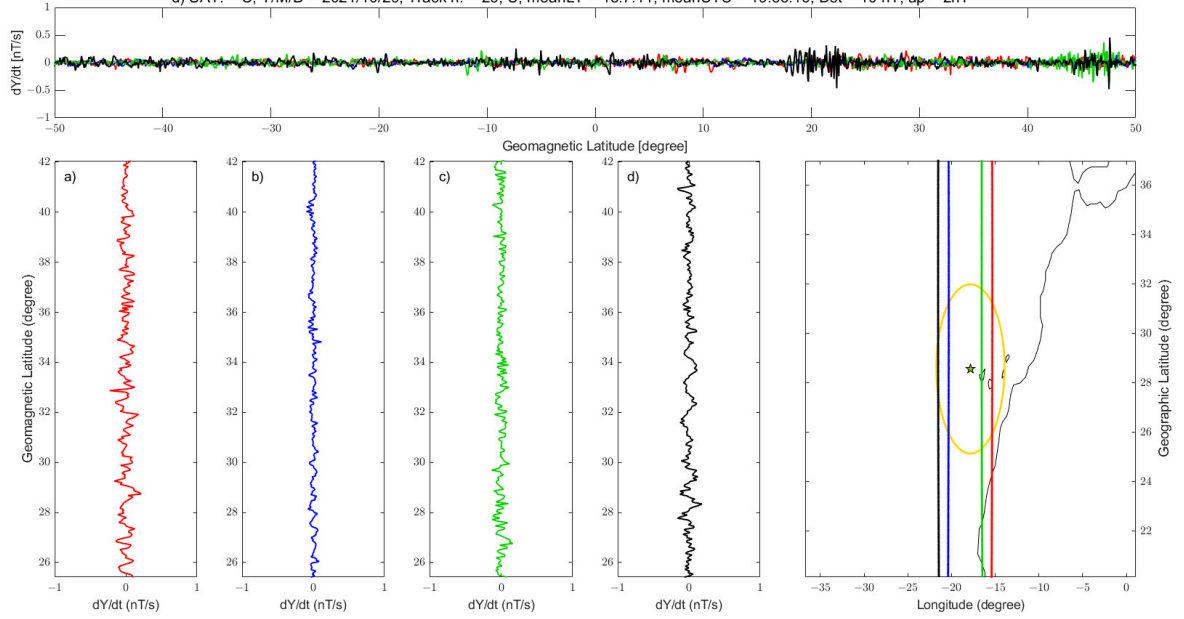
- a) SAT. = C; Y/M/D = 2021/10/14; Track n. = 27, U; meanLT = 19:28:7; meanUTC = 20:44:50; Dst = -17 nT; ap = 9nT  
b) SAT. = C; Y/M/D = 2021/10/17; Track n. = 12, D; meanLT = 7:3:5; meanUTC = 8:18:6; Dst = 0 nT; ap = 4nT  
c) SAT. = C; Y/M/D = 2021/10/17; Track n. = 27, U; meanLT = 19:11:60; meanUTC = 20:11:58; Dst = -44 nT; ap = 27nT  
d) SAT. = C; Y/M/D = 2021/10/19; Track n. = 27, U; meanLT = 19:1:9; meanUTC = 20:21:6; Dst = -21 nT; ap = 27nT



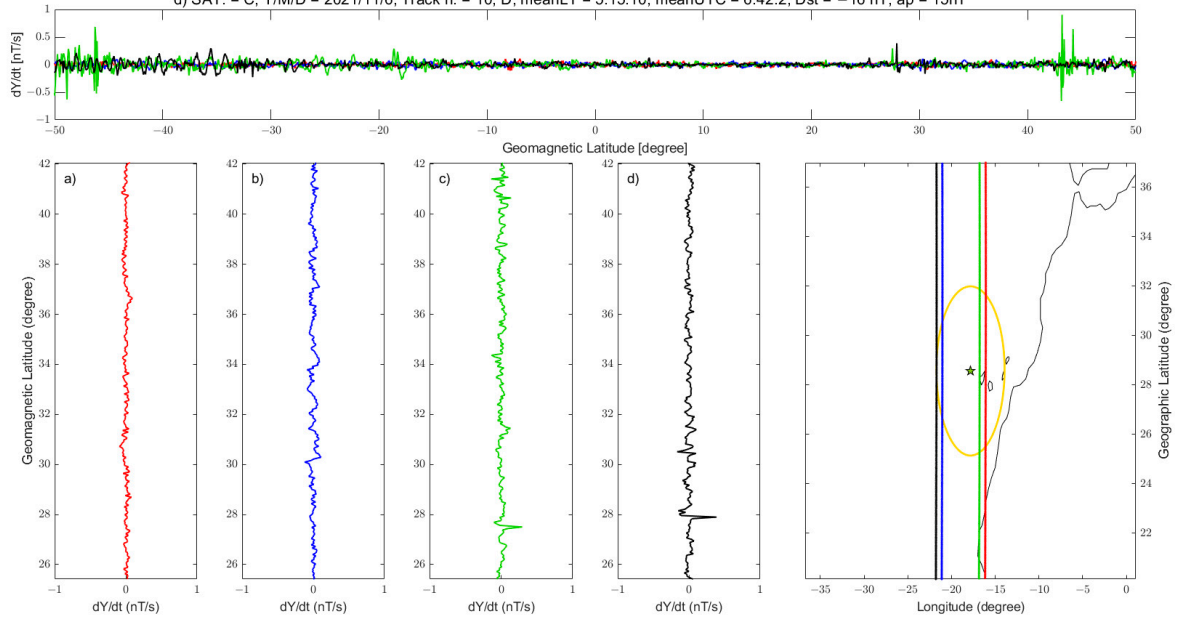
- a) SAT. = C; Y/M/D = 2021/10/20; Track n. = 11, D; meanLT = 6:46:58; meanUTC = 7:45:12; Dst = -6 nT; ap = 3nT  
b) SAT. = C; Y/M/D = 2021/10/22; Track n. = 11, D; meanLT = 6:36:6; meanUTC = 7:54:19; Dst = -8 nT; ap = 2nT  
c) SAT. = C; Y/M/D = 2021/10/22; Track n. = 26, U; meanLT = 18:45:2; meanUTC = 19:48:10; Dst = -2 nT; ap = 3nT  
d) SAT. = C; Y/M/D = 2021/10/24; Track n. = 26, U; meanLT = 18:34:10; meanUTC = 19:57:15; Dst = -10 nT; ap = 4nT



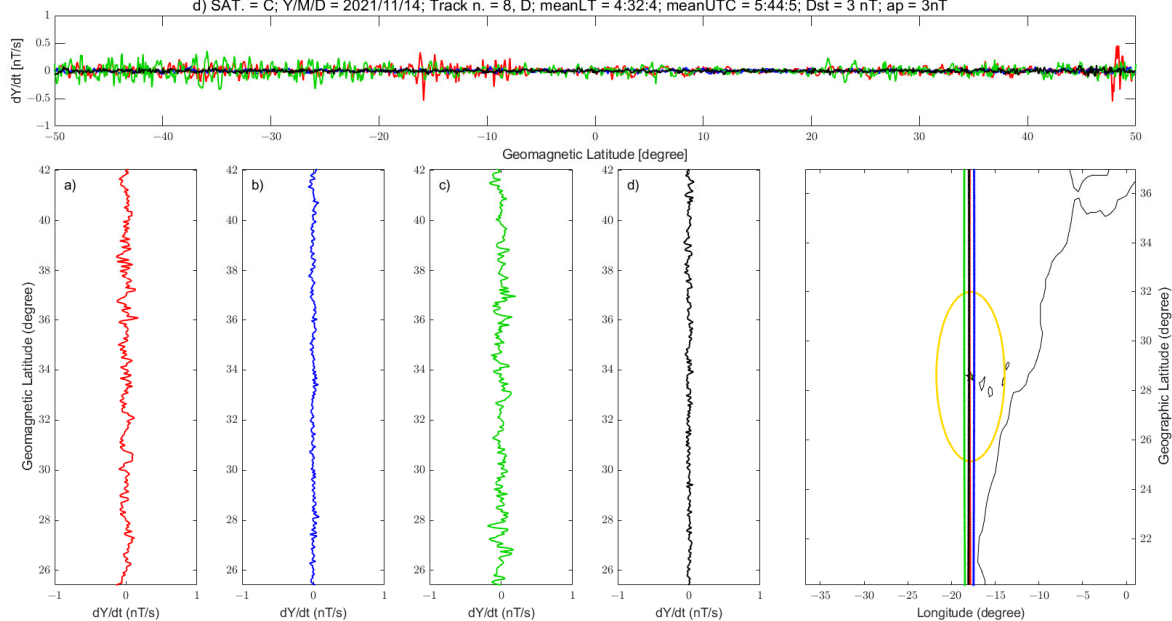
- a) SAT. = C; Y/M/D = 2021/10/25; Track n. = 11, D; meanLT = 6:19:59; meanUTC = 7:21:21; Dst = -5 nT; ap = 3nT  
b) SAT. = C; Y/M/D = 2021/10/27; Track n. = 11, D; meanLT = 6:9:7; meanUTC = 7:30:24; Dst = 5 nT; ap = 0nT  
c) SAT. = C; Y/M/D = 2021/10/27; Track n. = 26, U; meanLT = 18:18:3; meanUTC = 19:24:15; Dst = 3 nT; ap = 3nT  
d) SAT. = C; Y/M/D = 2021/10/29; Track n. = 26, U; meanLT = 18:7:11; meanUTC = 19:33:16; Dst = 10 nT; ap = 2nT



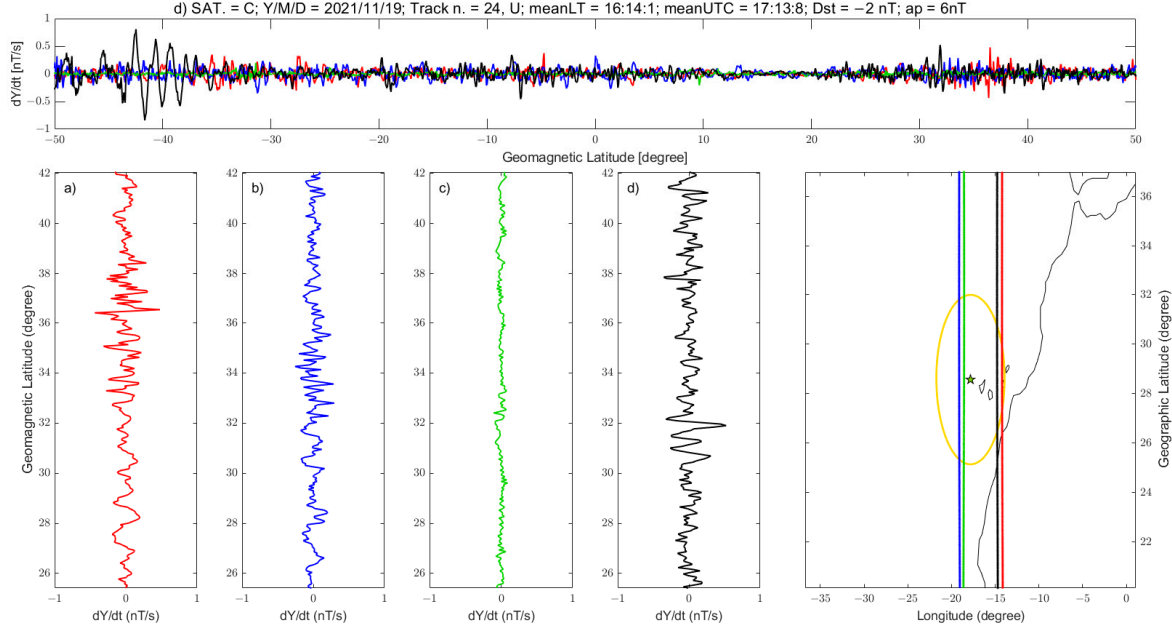
- a) SAT. = C; Y/M/D = 2021/10/30; Track n. = 10, D; meanLT = 5:53:0; meanUTC = 6:57:21; Dst = -9 nT; ap = 9nT  
b) SAT. = C; Y/M/D = 2021/11/1; Track n. = 10, D; meanLT = 5:42:9; meanUTC = 7:6:21; Dst = -8 nT; ap = 4nT  
c) SAT. = A; Y/M/D = 2021/9/22; Track n. = 14, D; meanLT = 9:17:54; meanUTC = 10:14:56; Dst = -20 nT; ap = 12nT  
d) SAT. = C; Y/M/D = 2021/11/6; Track n. = 10, D; meanLT = 5:15:10; meanUTC = 6:42:2; Dst = -16 nT; ap = 15nT



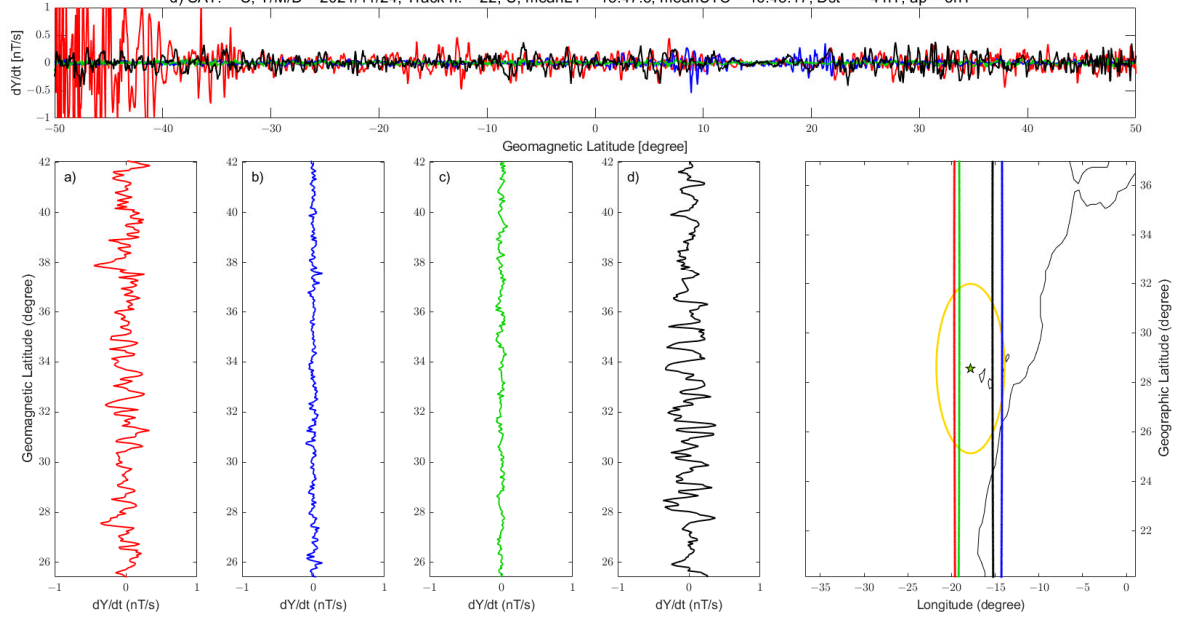
- a) SAT. = C; Y/M/D = 2021/11/6; Track n. = 25, U; meanLT = 17:24:6; meanUTC = 18:35:49; Dst = -30 nT; ap = 15nT  
b) SAT. = C; Y/M/D = 2021/11/9; Track n. = 9, D; meanLT = 4:59:3; meanUTC = 6:8:42; Dst = -15 nT; ap = 5nT  
c) SAT. = C; Y/M/D = 2021/11/11; Track n. = 24, U; meanLT = 16:57:7; meanUTC = 18:11:17; Dst = 2 nT; ap = 5nT  
d) SAT. = C; Y/M/D = 2021/11/14; Track n. = 8, D; meanLT = 4:32:4; meanUTC = 5:44:5; Dst = 3 nT; ap = 3nT



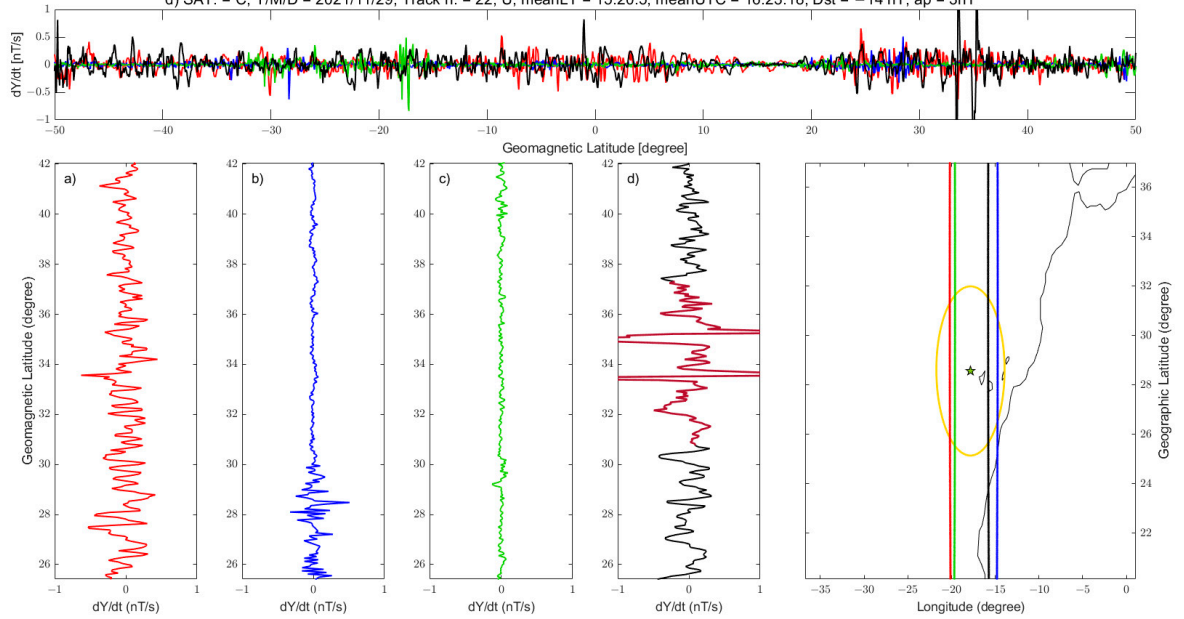
- a) SAT. = C; Y/M/D = 2021/11/14; Track n. = 24, U; meanLT = 16:41:0; meanUTC = 17:37:52; Dst = -4 nT; ap = 3nT  
b) SAT. = C; Y/M/D = 2021/11/16; Track n. = 24, U; meanLT = 16:30:8; meanUTC = 17:46:37; Dst = -8 nT; ap = 9nT  
c) SAT. = C; Y/M/D = 2021/11/19; Track n. = 8, D; meanLT = 4:5:6; meanUTC = 5:19:22; Dst = 4 nT; ap = 2nT  
d) SAT. = C; Y/M/D = 2021/11/19; Track n. = 24, U; meanLT = 16:14:1; meanUTC = 17:13:8; Dst = -2 nT; ap = 6nT



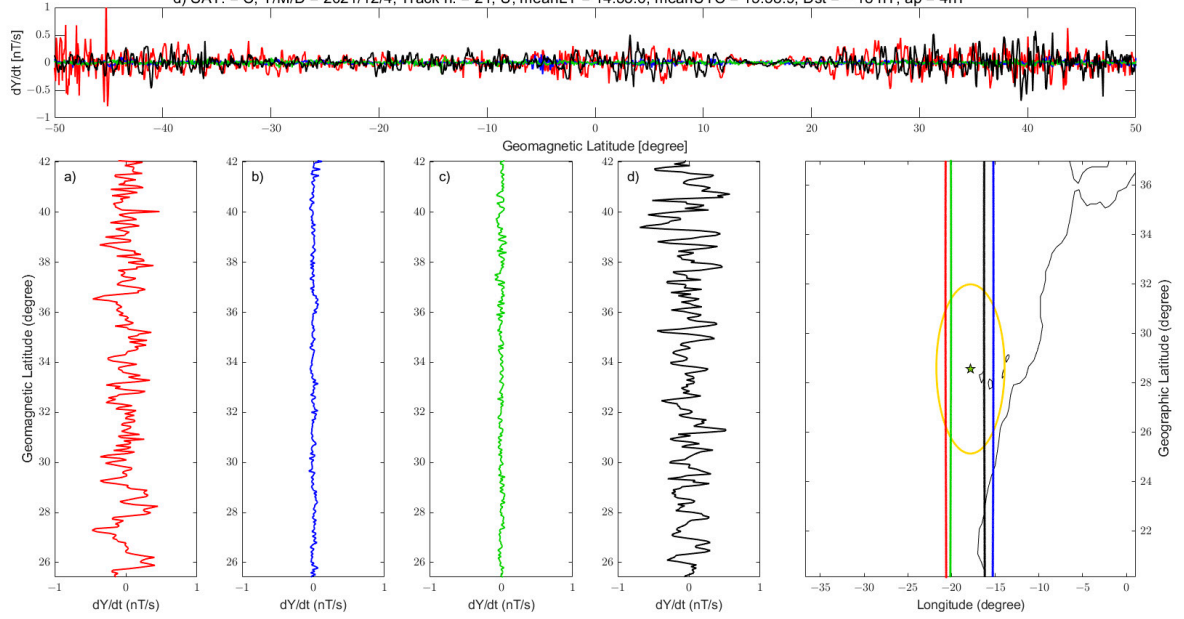
- a) SAT. = C; Y/M/D = 2021/11/21; Track n. = 23, U; meanLT = 16:3:10; meanUTC = 17:21:51; Dst = -3 nT; ap = 18nT  
b) SAT. = C; Y/M/D = 2021/11/22; Track n. = 7, D; meanLT = 3:48:59; meanUTC = 4:45:51; Dst = 2 nT; ap = 15nT  
c) SAT. = C; Y/M/D = 2021/11/24; Track n. = 7, D; meanLT = 3:38:7; meanUTC = 4:54:32; Dst = 1 nT; ap = 6nT  
d) SAT. = C; Y/M/D = 2021/11/24; Track n. = 22, U; meanLT = 15:47:3; meanUTC = 16:48:17; Dst = -4 nT; ap = 3nT



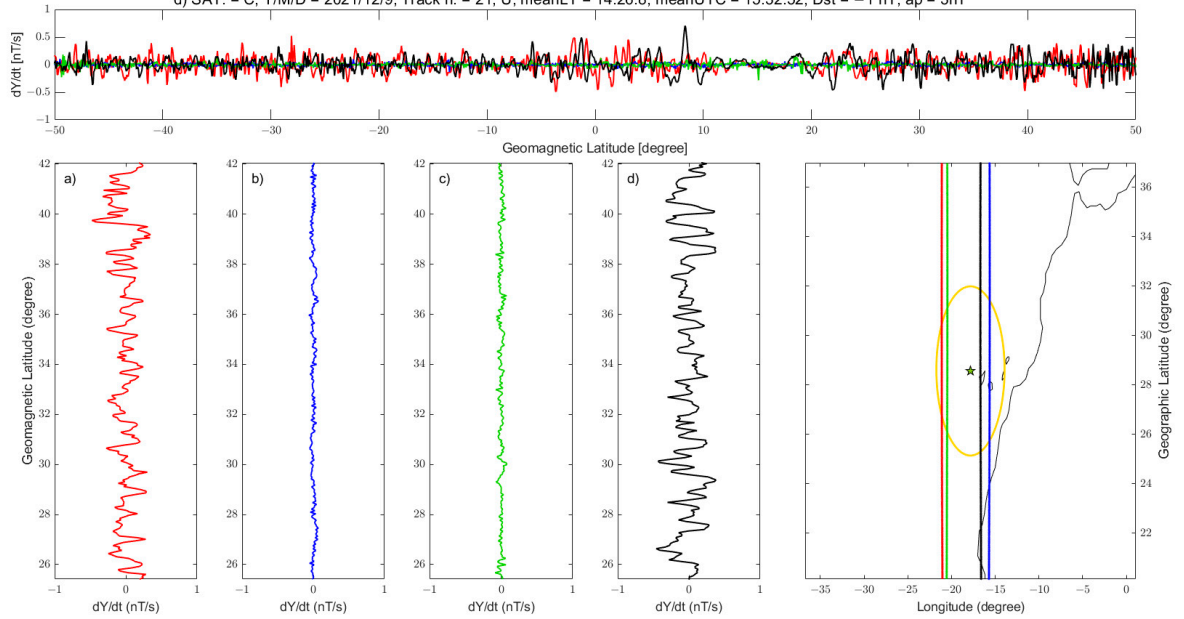
- a) SAT. = C; Y/M/D = 2021/11/26; Track n. = 23, U; meanLT = 15:36:11; meanUTC = 16:56:57; Dst = 4 nT; ap = 5nT  
b) SAT. = C; Y/M/D = 2021/11/27; Track n. = 7, D; meanLT = 3:22:1; meanUTC = 4:20:56; Dst = 7 nT; ap = 2nT  
c) SAT. = C; Y/M/D = 2021/11/29; Track n. = 7, D; meanLT = 3:11:9; meanUTC = 4:29:34; Dst = -20 nT; ap = 18nT  
d) SAT. = C; Y/M/D = 2021/11/29; Track n. = 22, U; meanLT = 15:20:5; meanUTC = 16:23:18; Dst = -14 nT; ap = 3nT

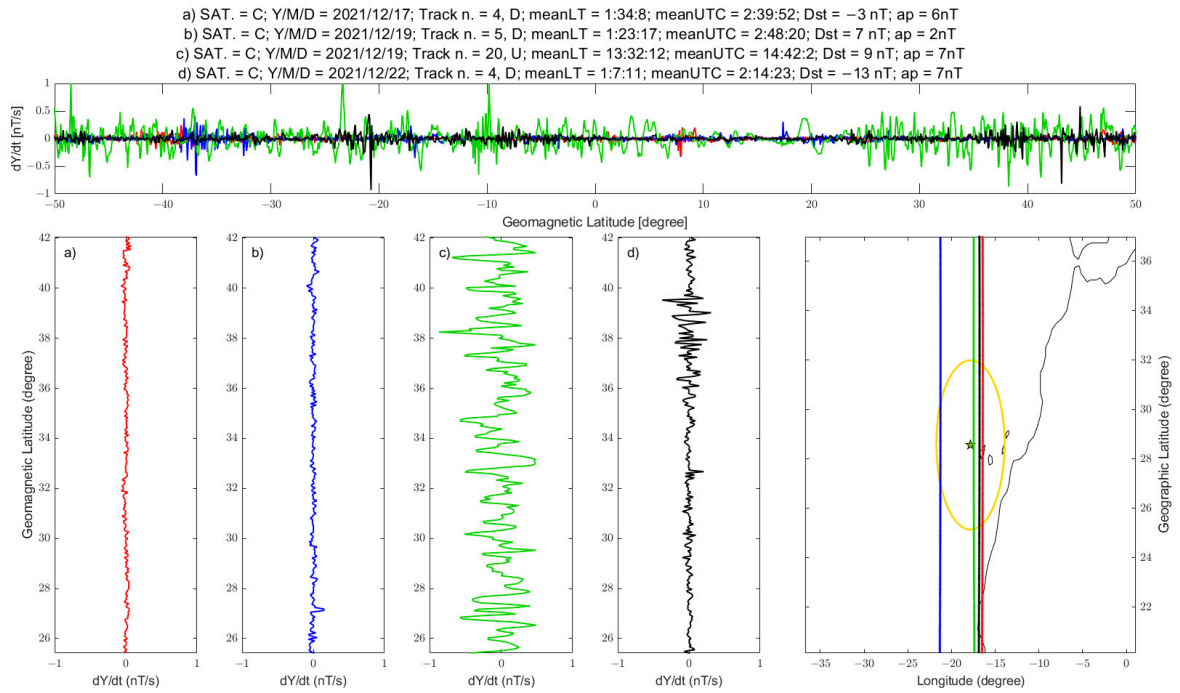
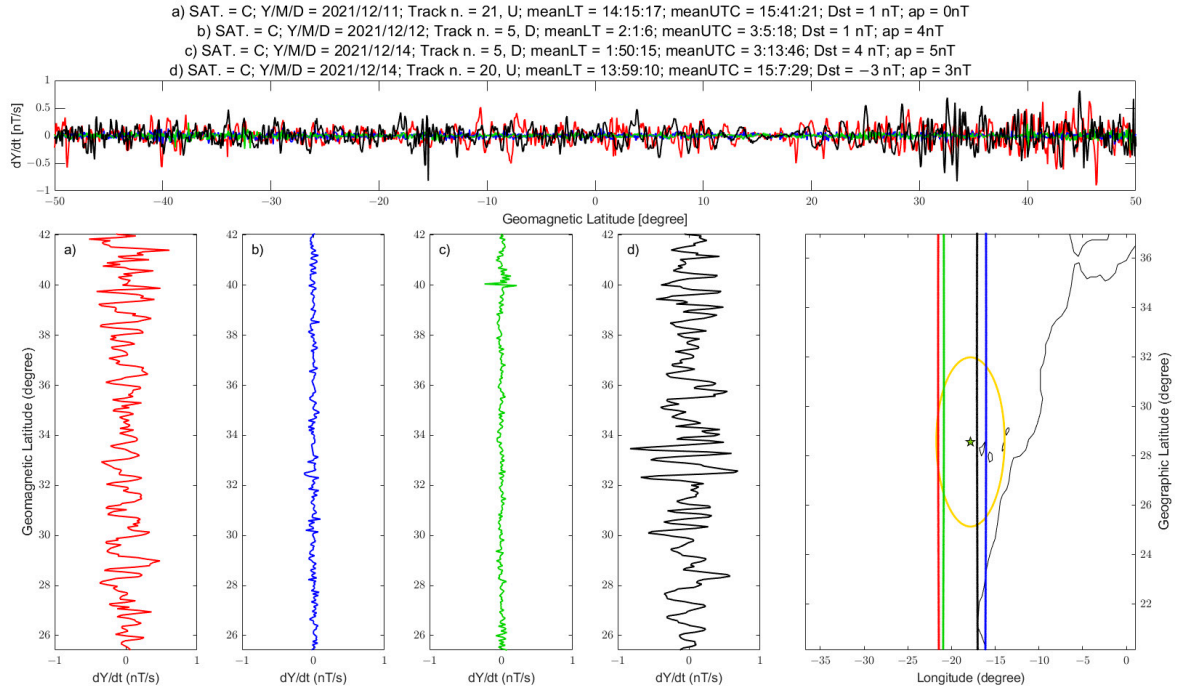


- a) SAT. = C; Y/M/D = 2021/12/1; Track n. = 22, U; meanLT = 15:9:13; meanUTC = 16:31:54; Dst = -28 nT; ap = 18nT  
b) SAT. = C; Y/M/D = 2021/12/2; Track n. = 6, D; meanLT = 2:55:2; meanUTC = 3:55:52; Dst = -26 nT; ap = 6nT  
c) SAT. = C; Y/M/D = 2021/12/4; Track n. = 6, D; meanLT = 2:44:11; meanUTC = 4:4:26; Dst = -17 nT; ap = 9nT  
d) SAT. = C; Y/M/D = 2021/12/4; Track n. = 21, U; meanLT = 14:53:6; meanUTC = 15:58:9; Dst = -18 nT; ap = 4nT



- a) SAT. = C; Y/M/D = 2021/12/6; Track n. = 21, U; meanLT = 14:42:14; meanUTC = 16:6:41; Dst = -9 nT; ap = 12nT  
b) SAT. = C; Y/M/D = 2021/12/7; Track n. = 6, D; meanLT = 2:28:4; meanUTC = 3:30:39; Dst = -7 nT; ap = 5nT  
c) SAT. = C; Y/M/D = 2021/12/9; Track n. = 6, D; meanLT = 2:17:13; meanUTC = 3:39:9; Dst = -10 nT; ap = 3nT  
d) SAT. = C; Y/M/D = 2021/12/9; Track n. = 21, U; meanLT = 14:26:8; meanUTC = 15:32:52; Dst = -1 nT; ap = 3nT





a) SAT. = C; Y/M/D = 2021/12/24; Track n. = 4, D; meanLT = 0:56:19; meanUTC = 2:22:45; Dst = -5 nT; ap = 3nT  
b) SAT. = C; Y/M/D = 2021/12/24; Track n. = 19, U; meanLT = 13:5:14; meanUTC = 14:16:25; Dst = 1 nT; ap = 4nT  
c) SAT. = C; Y/M/D = 2021/12/27; Track n. = 3, D; meanLT = 0:40:13; meanUTC = 1:48:38; Dst = -11 nT; ap = 6nT  
d) SAT. = C; Y/M/D = 2021/12/29; Track n. = 19, U; meanLT = 12:38:16; meanUTC = 13:50:31; Dst = -8 nT; ap = 5nT

