

1                   **Floating debris in the northern Gulf of Mexico after Hurricane Katrina**

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15                                   **Supporting Information**

16                  Number of pages: S1 – S17

17                  Number of figures: 7 (Fig. S1 – Fig. S7)

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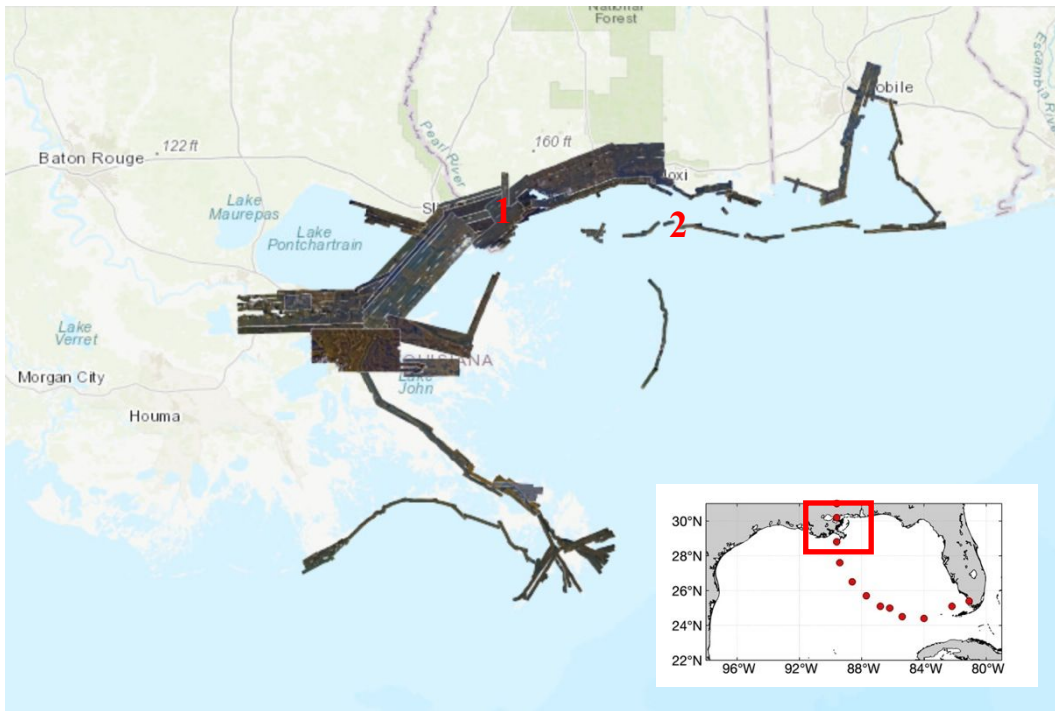


Fig. S1. Airborne photos collected between 30 August and 6 September 2005 by NOAA after Katrina’s landing on 29 August 2005, with the inset figure showing the location of the map (source: [https://geodesy.noaa.gov/storm\\_archive/storms/katrina/](https://geodesy.noaa.gov/storm_archive/storms/katrina/)). Nearly all photos were collected on land or along shorelines, with 2 photos annotated as “1” and “2”, which are shown in Figs. S2 and S3, respectively. All maps were created by the authors.

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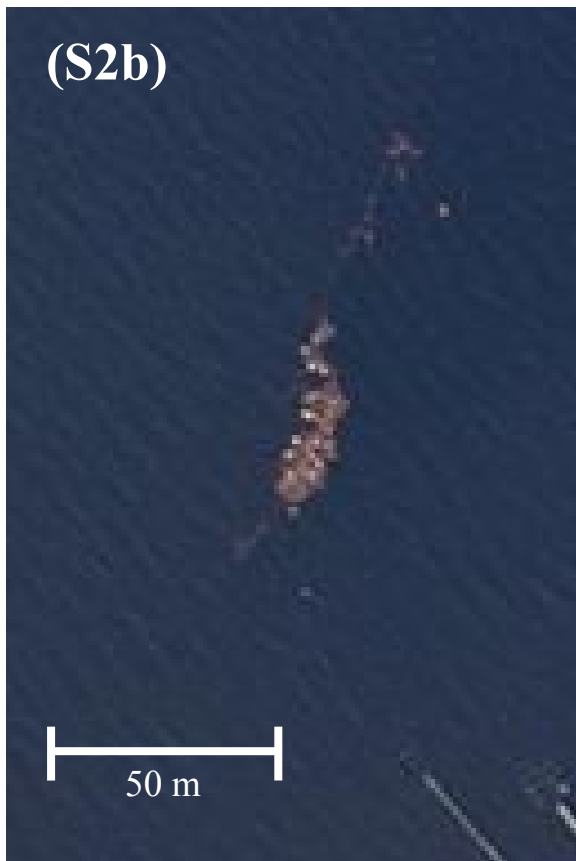
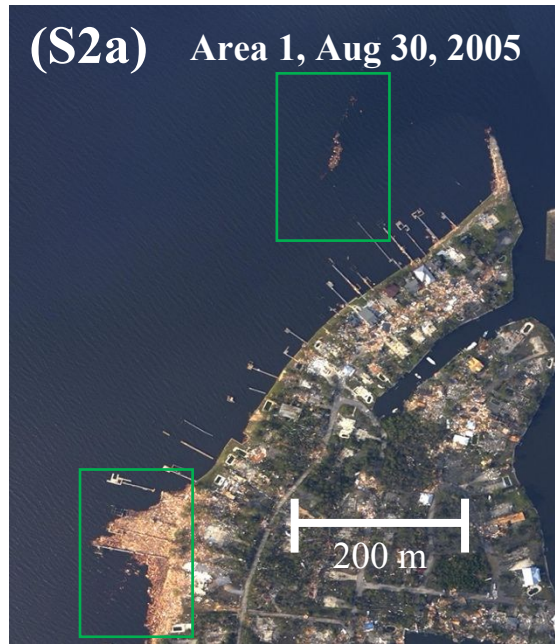
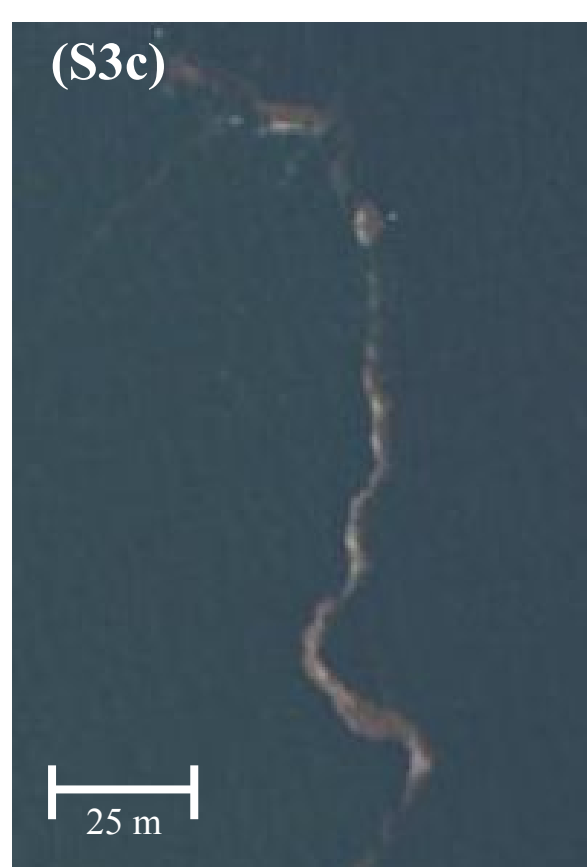
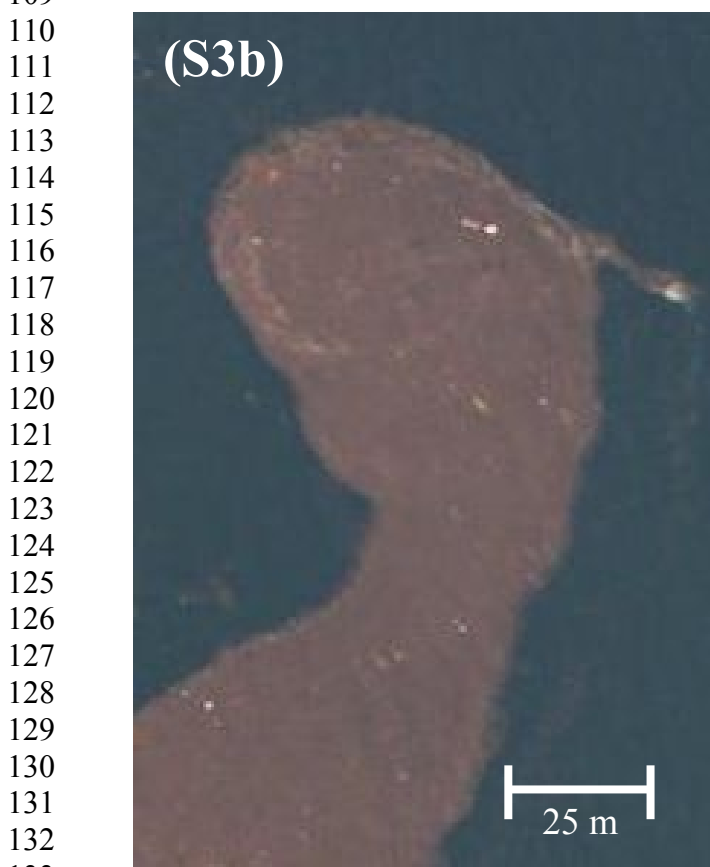
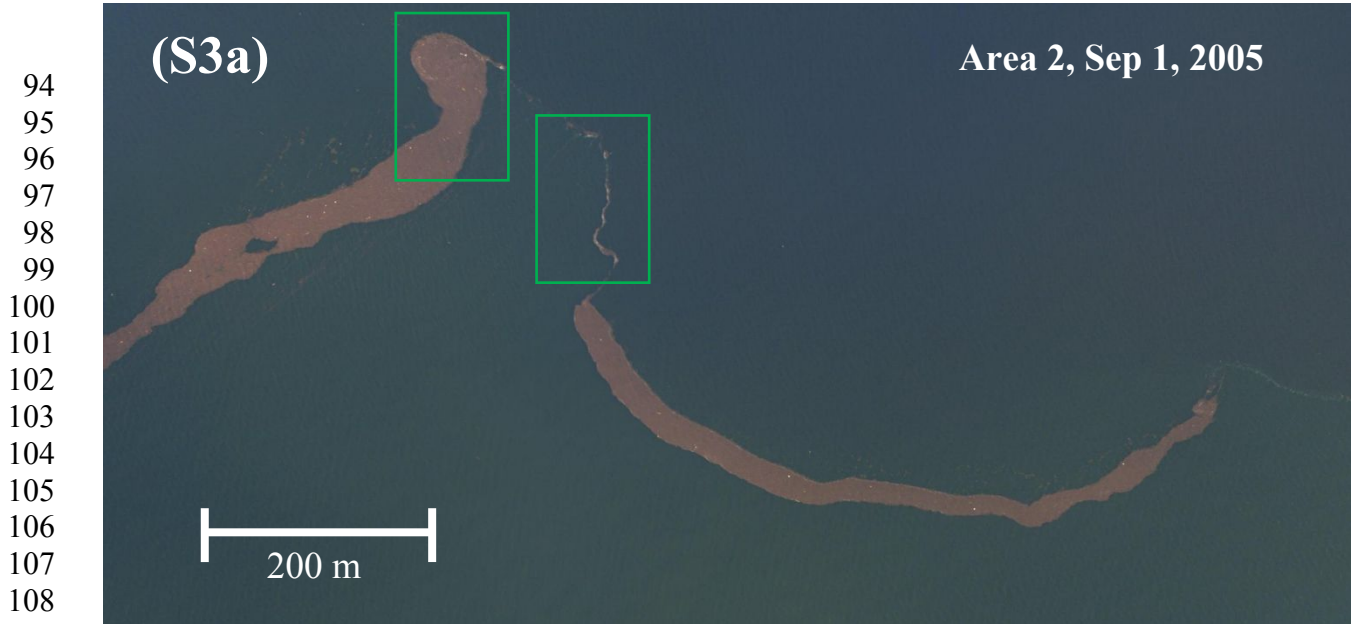


Fig. S2. (S2a) Airborne photo (0.5 m resolution) over Area 1 of Fig. S1 shows debris on water and near land (green rectangles) on 30 August 2005. The location is approximately 30°21'N, 89°18'W. (S2b) and (S2c): the two rectangular regions in (S2a) are enlarged to show the detailed debris features. All maps were created by the authors.



135 Fig. S3. (S3a) Airborne photo (0.5 m resolution) over Area 2 of Fig. S5 shows debris on water on 1  
136 September 2005. The location is approximately 30°16'30''N, 88°49'30''W. The two small areas  
137 outlined in the green rectangles are enlarged in (S3b) and (S3c), respectively, to show the detailed  
138 debris features. The whitish patches appear to be plastics among the brownish features of driftwood  
139 and dead plants. All maps were created by the authors.

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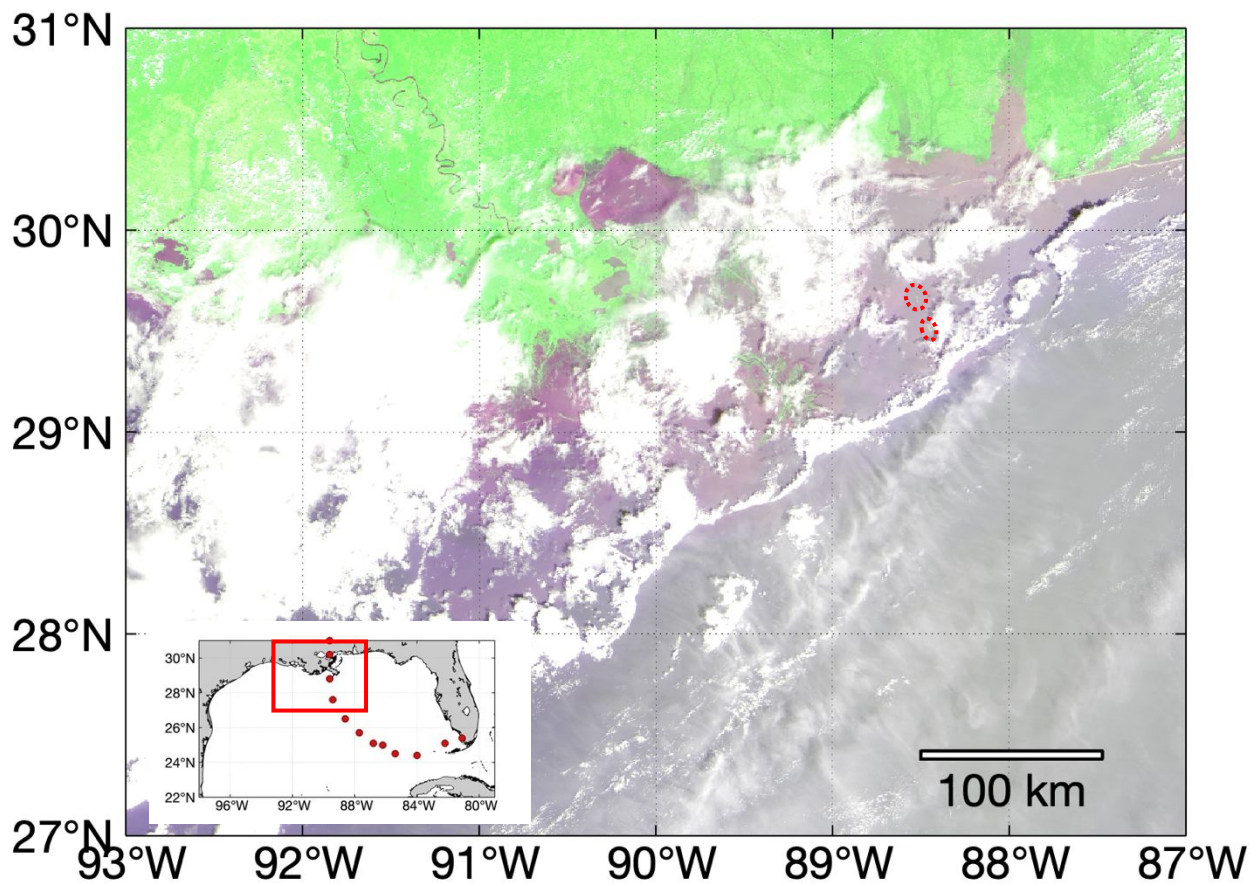


Fig. S4. MODIS/Terra FRGB image on 30 August 2005 (T2005242) over the northern Gulf of Mexico shows image features outlined in red. The location of this image is shown in the inset map, where the track of Hurricane Katrina (category 5 in the GoM) is overlaid. Katrina made land fall on 29 August 2005 (06:10 am) as a category-3 hurricane.

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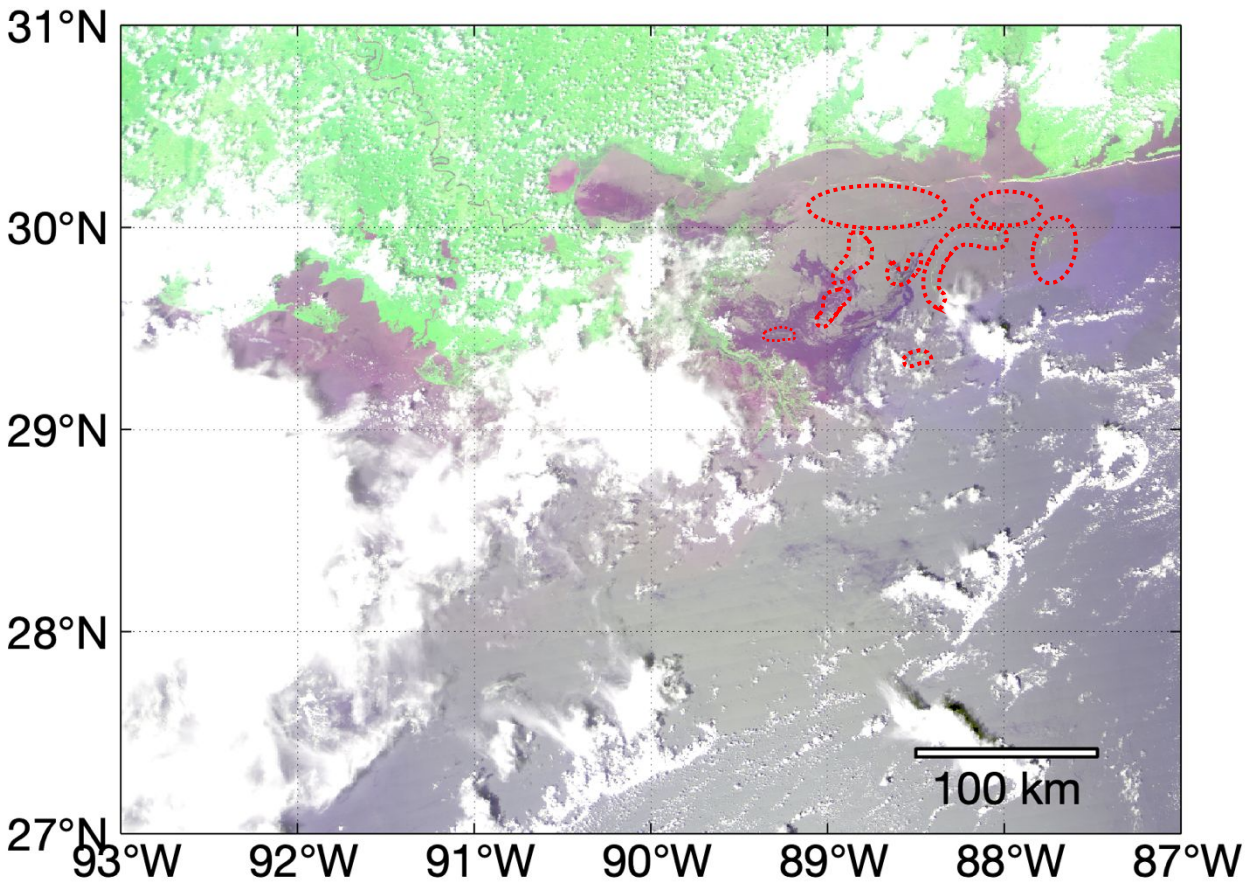
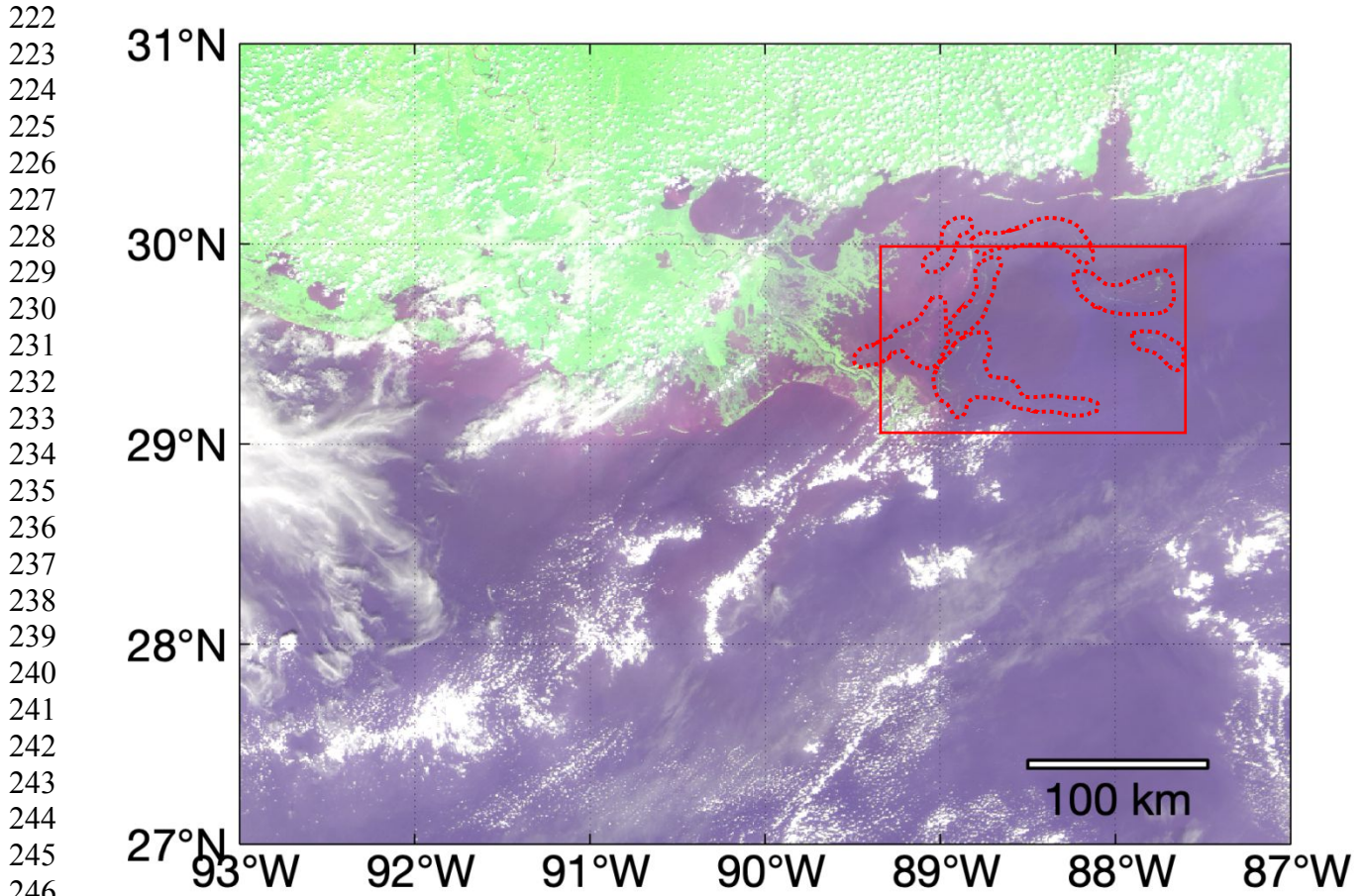


Fig. S4 (continued). MODIS/Aqua FRGB image on 31 August 2005 (A2005243) shows image features outlined in red.



249 Fig. S4 (continued). MODIS/Aqua FRGB image on 3 September 2005 (A2005246) shows image  
250 features outlined in red. The region outlined in the rectangular box is presented in Fig. 1b.

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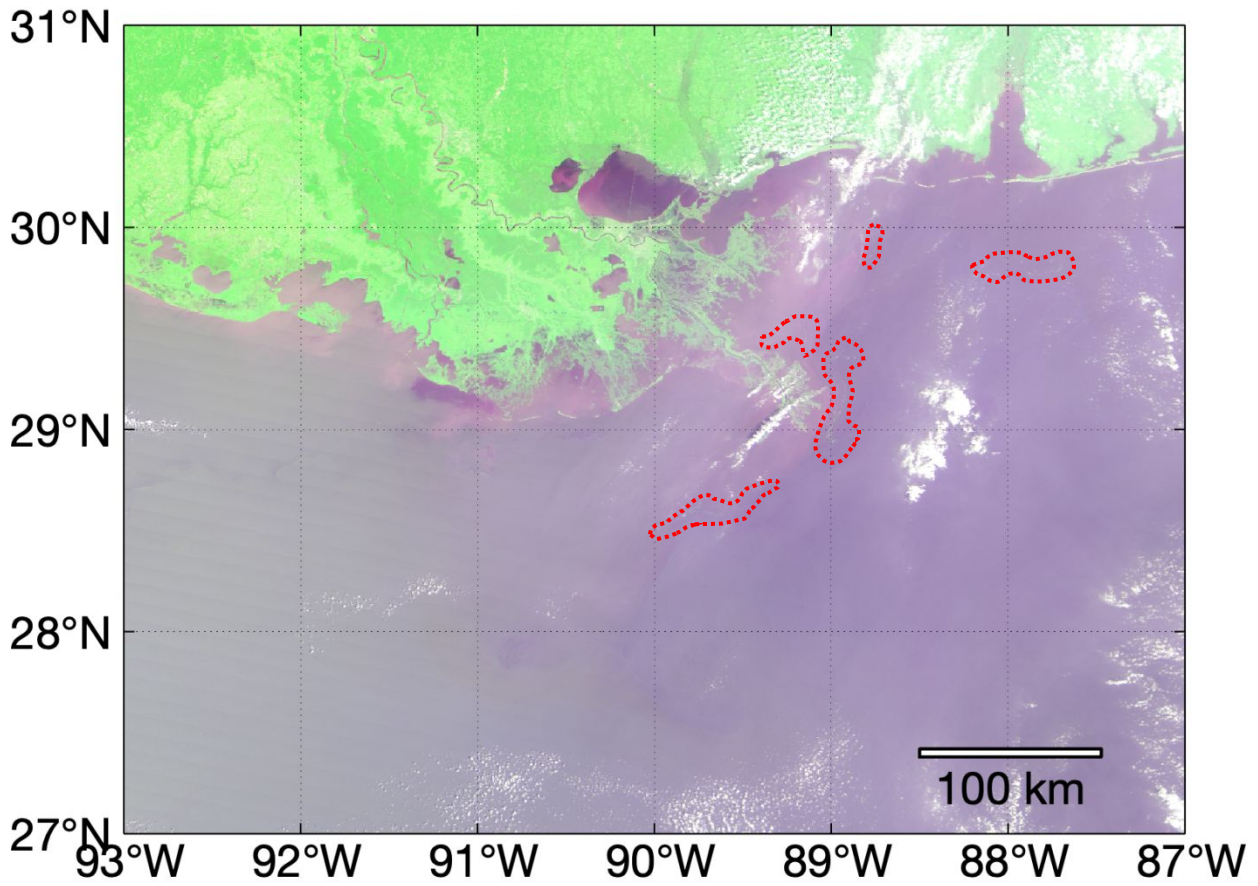
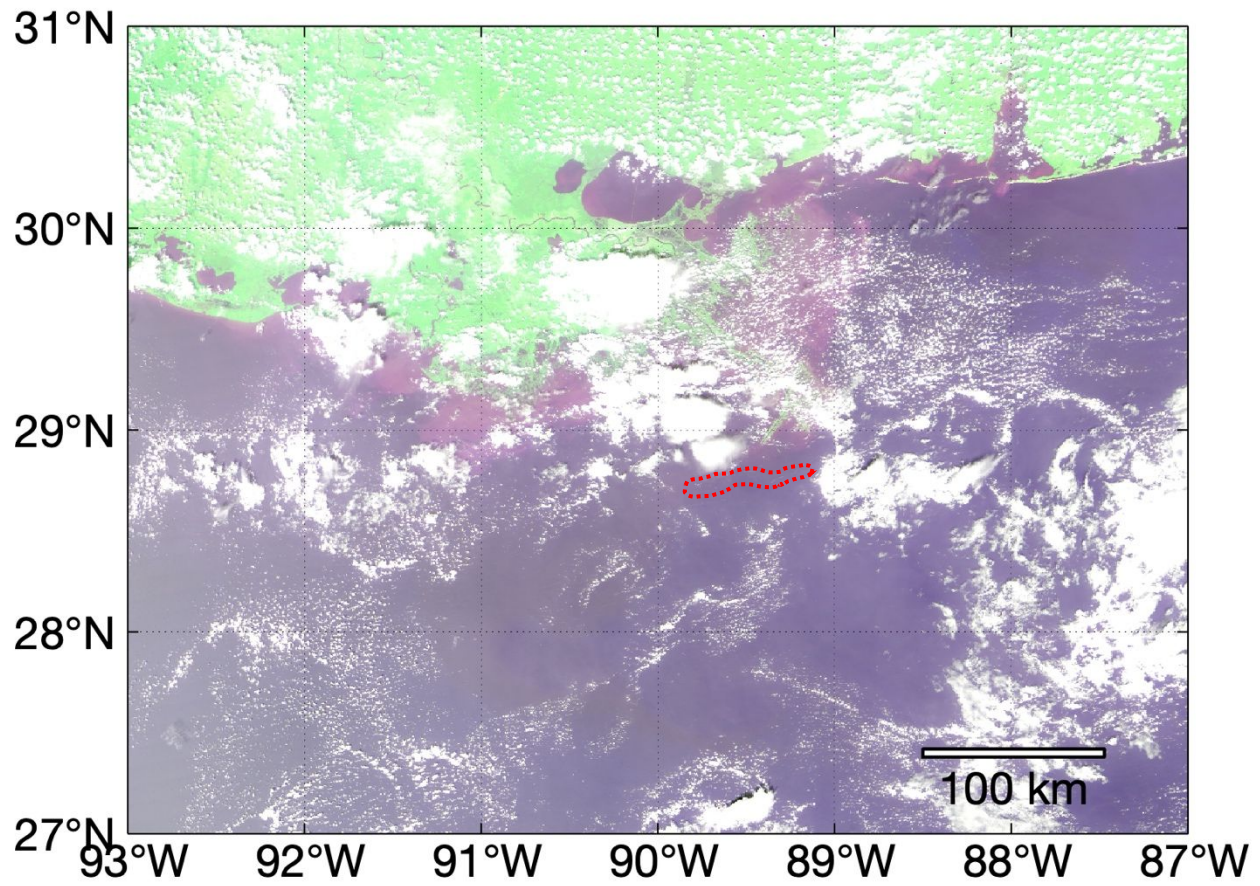


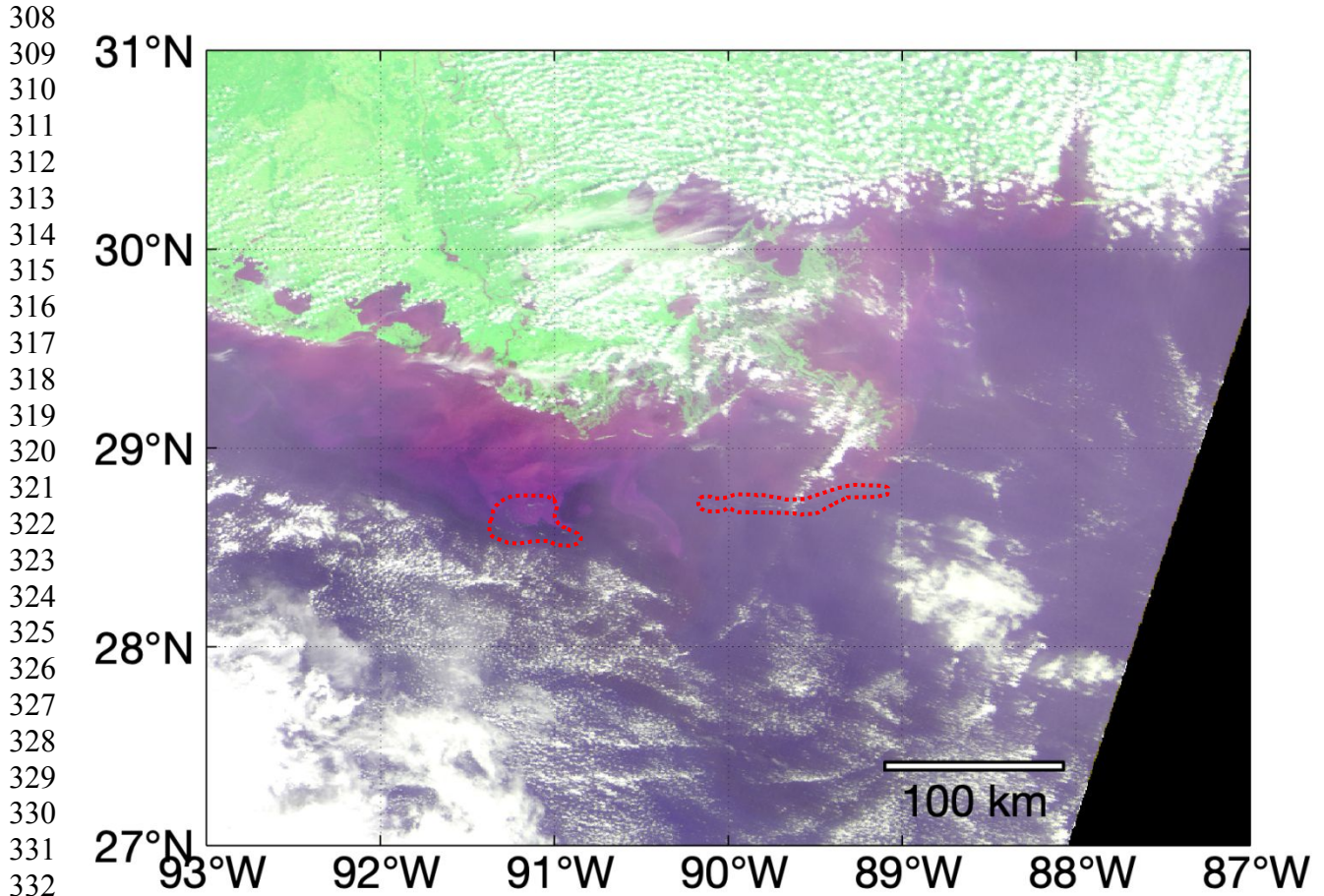
Fig. S4 (continued). MODIS/Terra FRGB image on 4 September 2005 (T2005247) shows image features outlined in red.





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Fig. S4 (continued). MODIS/Aqua FRGB image on 5 September 2005 (A2005248) shows image features outlined in red.



335 Fig. S4 (continued). MODIS/Terra FRGB image on 9 September 2005 (T2005252) shows image  
336 features outlined in red.  
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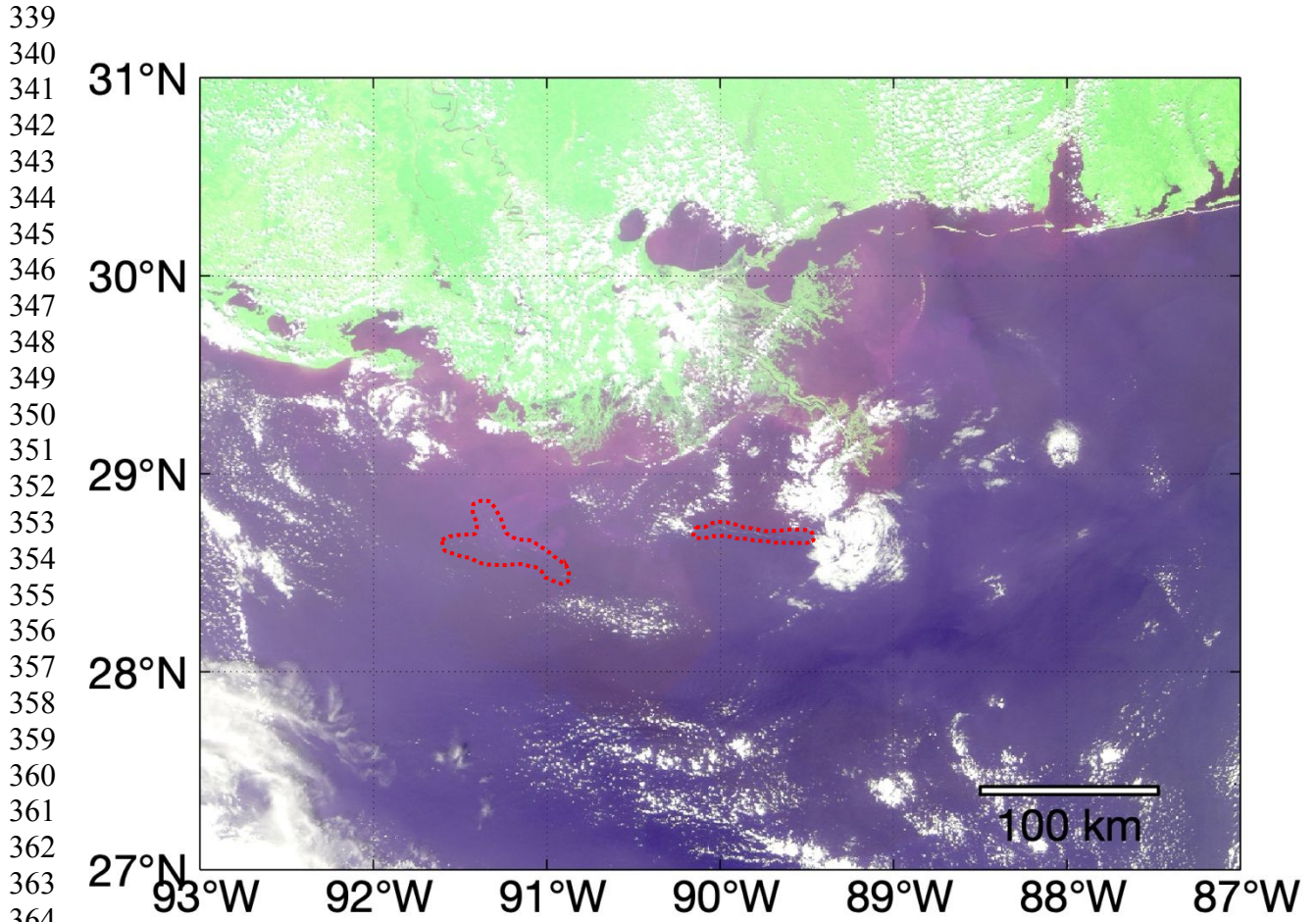
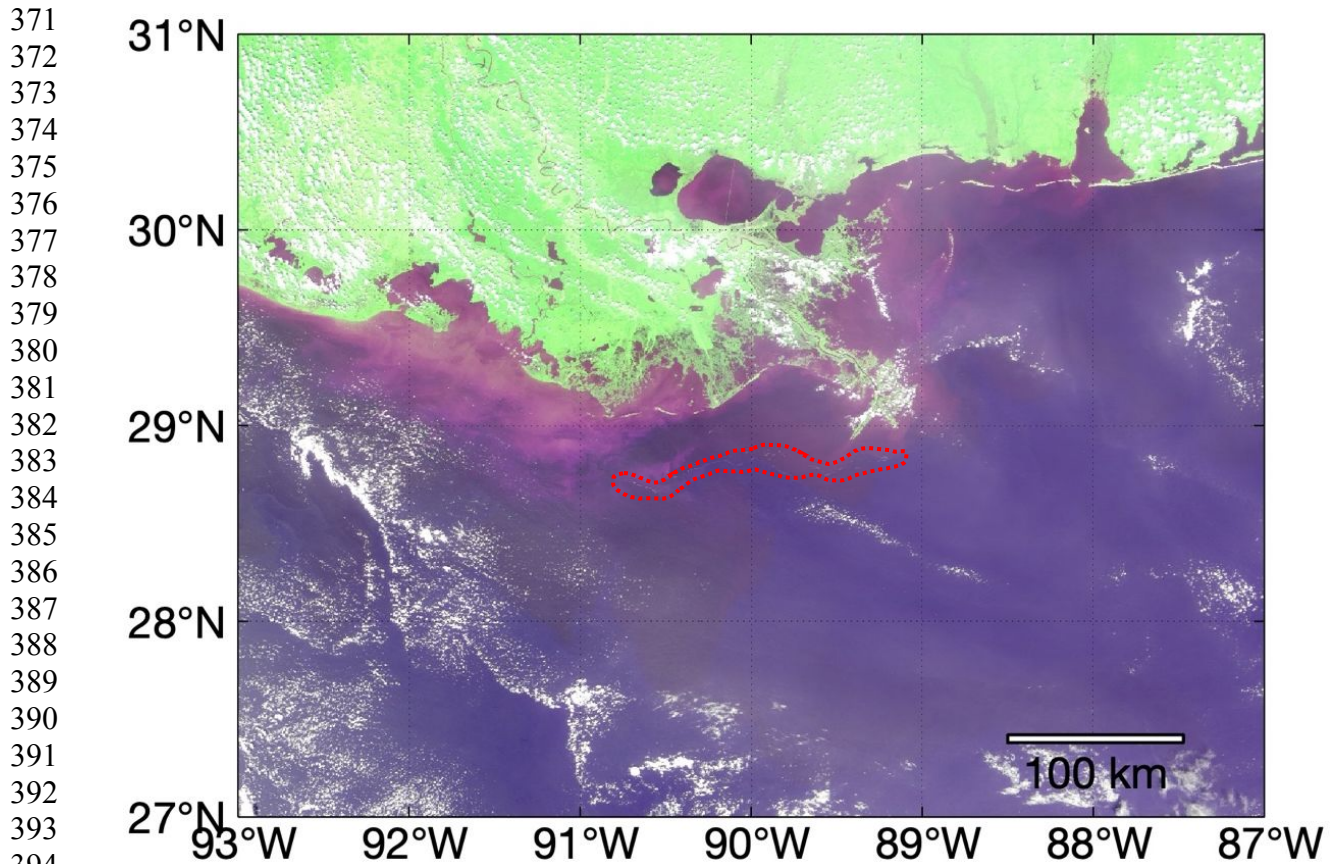
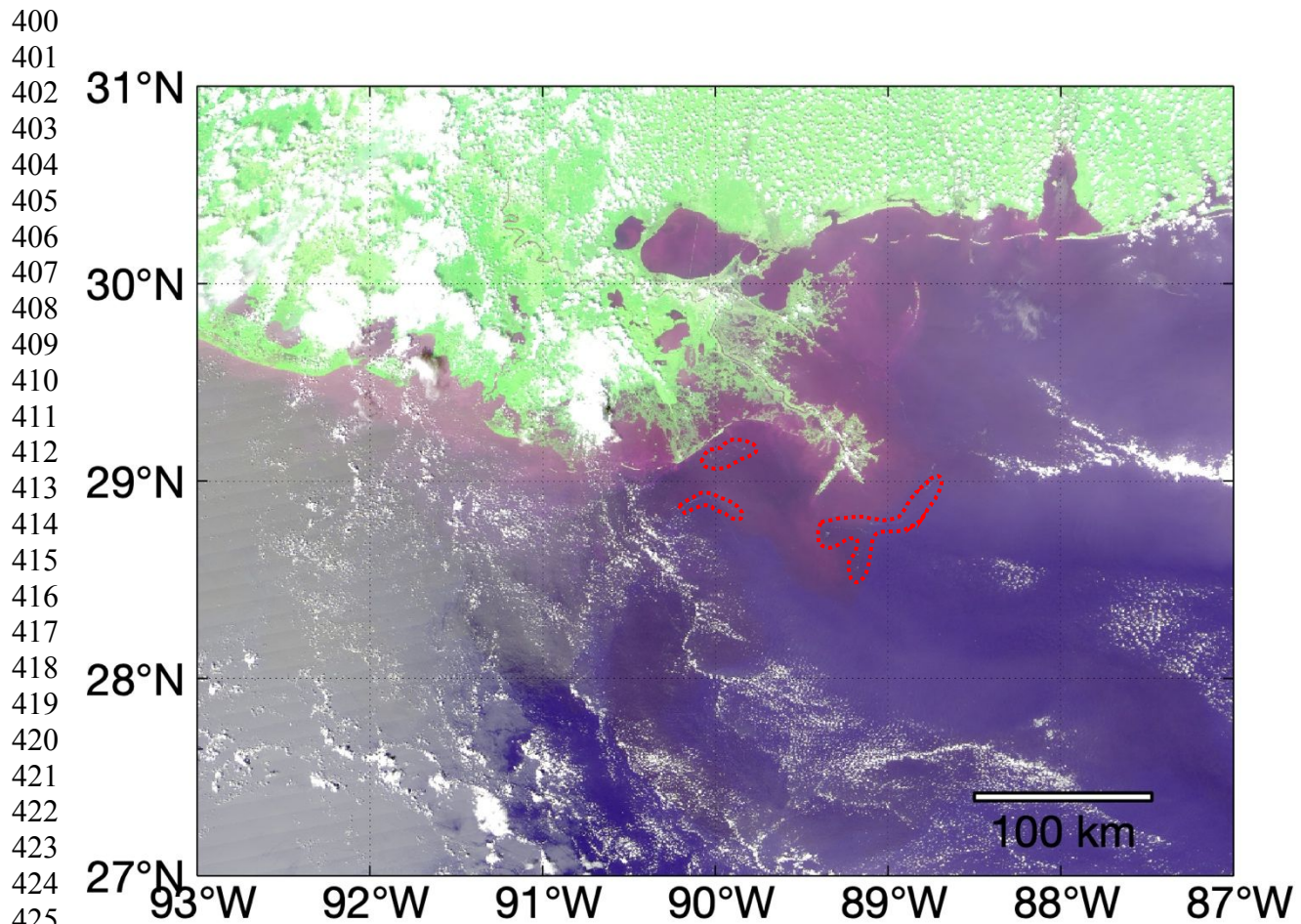


Fig. S4 (continued). MODIS/Terra FRGB image on 10 September 2005 (T2005253) shows image features outlined in red.



396 Fig. S4 (continued). MODIS/Aqua FRGB image on 12 September 2005 (A2005255) shows  
397 image features outlined in red.  
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427 Fig. S4 (continued). MODIS/Aqua FRGB image on 14 September 2005 (A2005257) shows  
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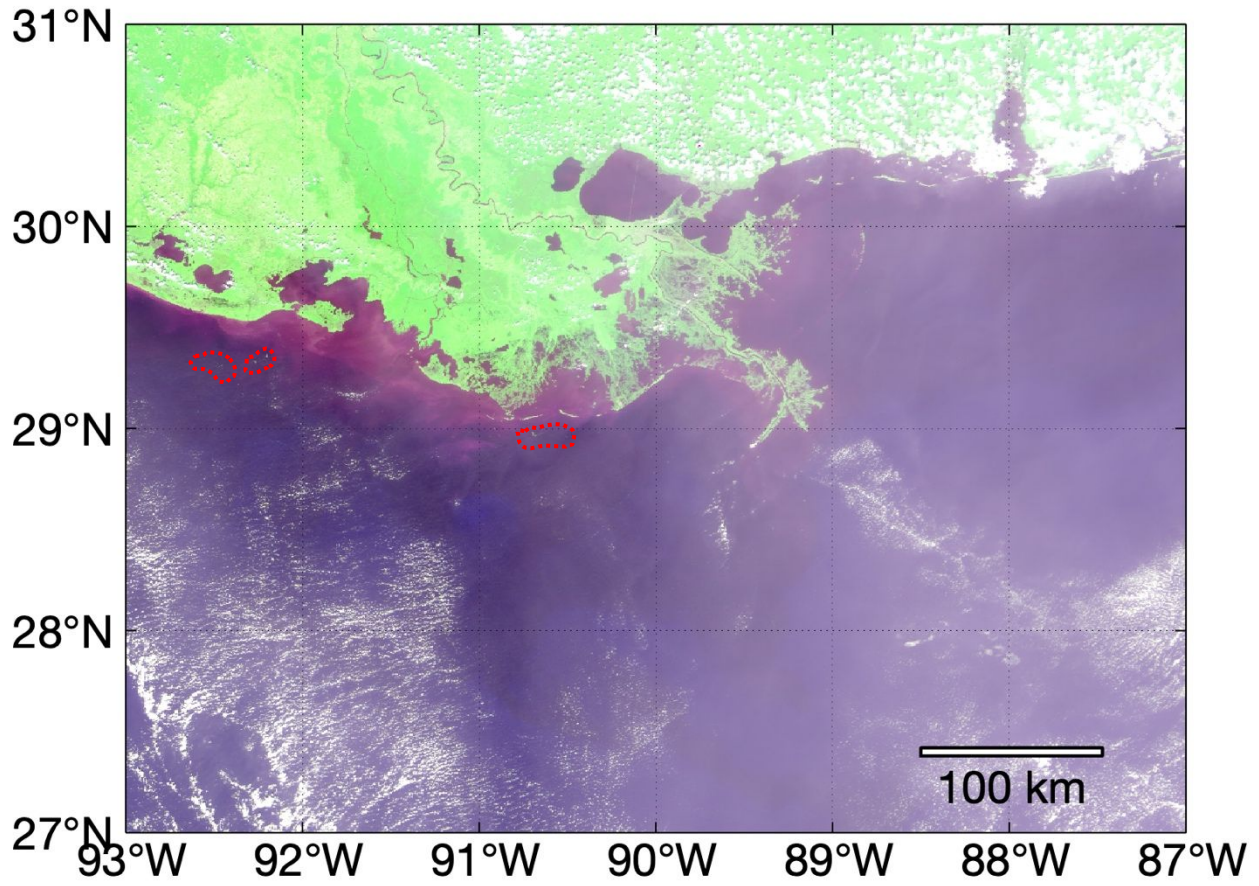


Fig. S4 (continued). MODIS/Aqua FRGB image on 19 September 2005 (A2005262) shows image features outlined in red.

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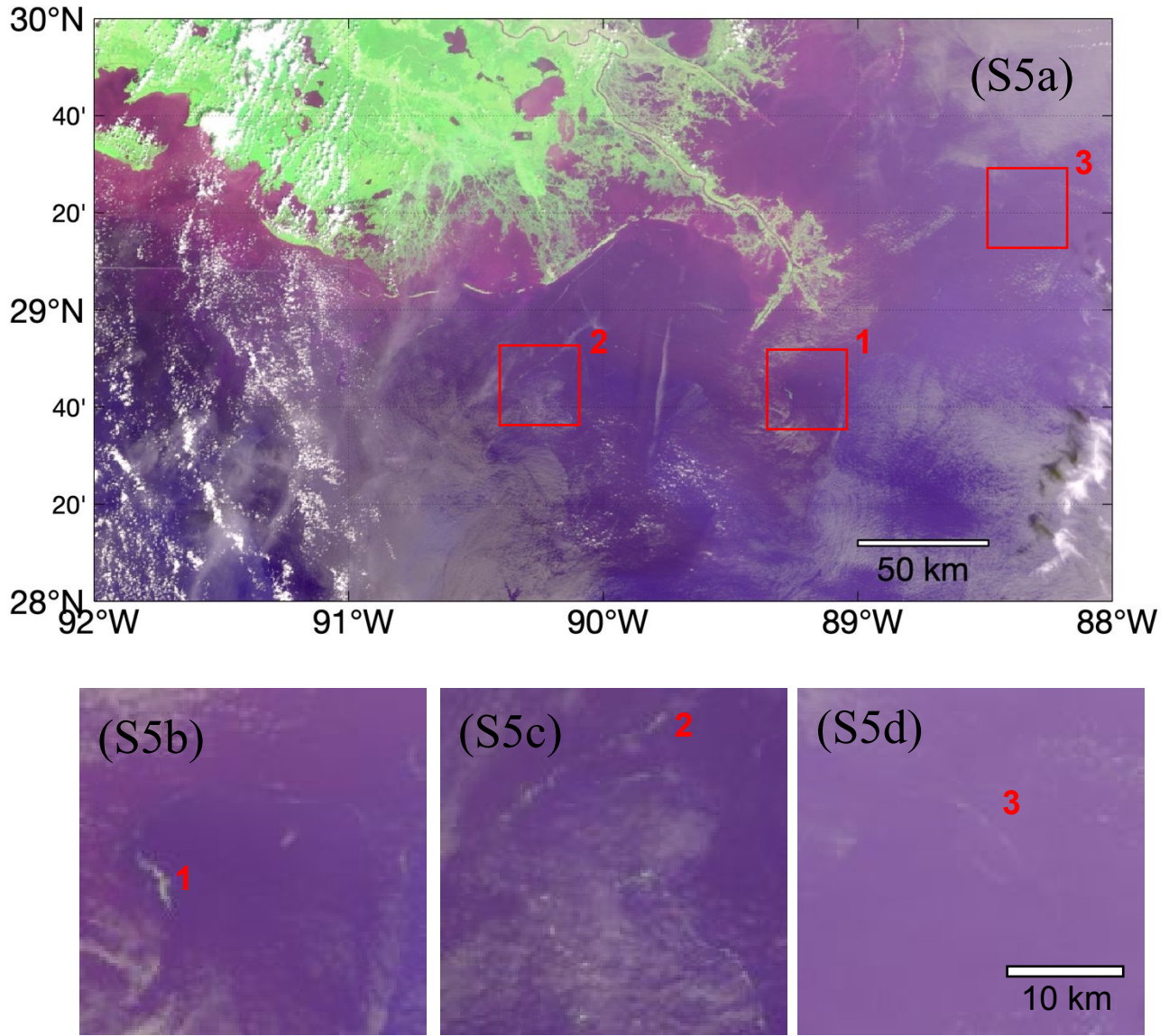


Fig. S5. (S5a) MERIS FRGB image collected on 15 September 2005 showing image slicks similar to those captured in the MODIS images of Fig. S4. Three boxes selected randomly (annotated as “1”, “2”, “3”) are enlarged in (S5b), (S5c), and (S5d), respectively, to show the slick features, with three of them annotated. MERIS  $\Delta R_{rc}$  spectra from these annotated slicks are presented in Figs. 3c & 3d.

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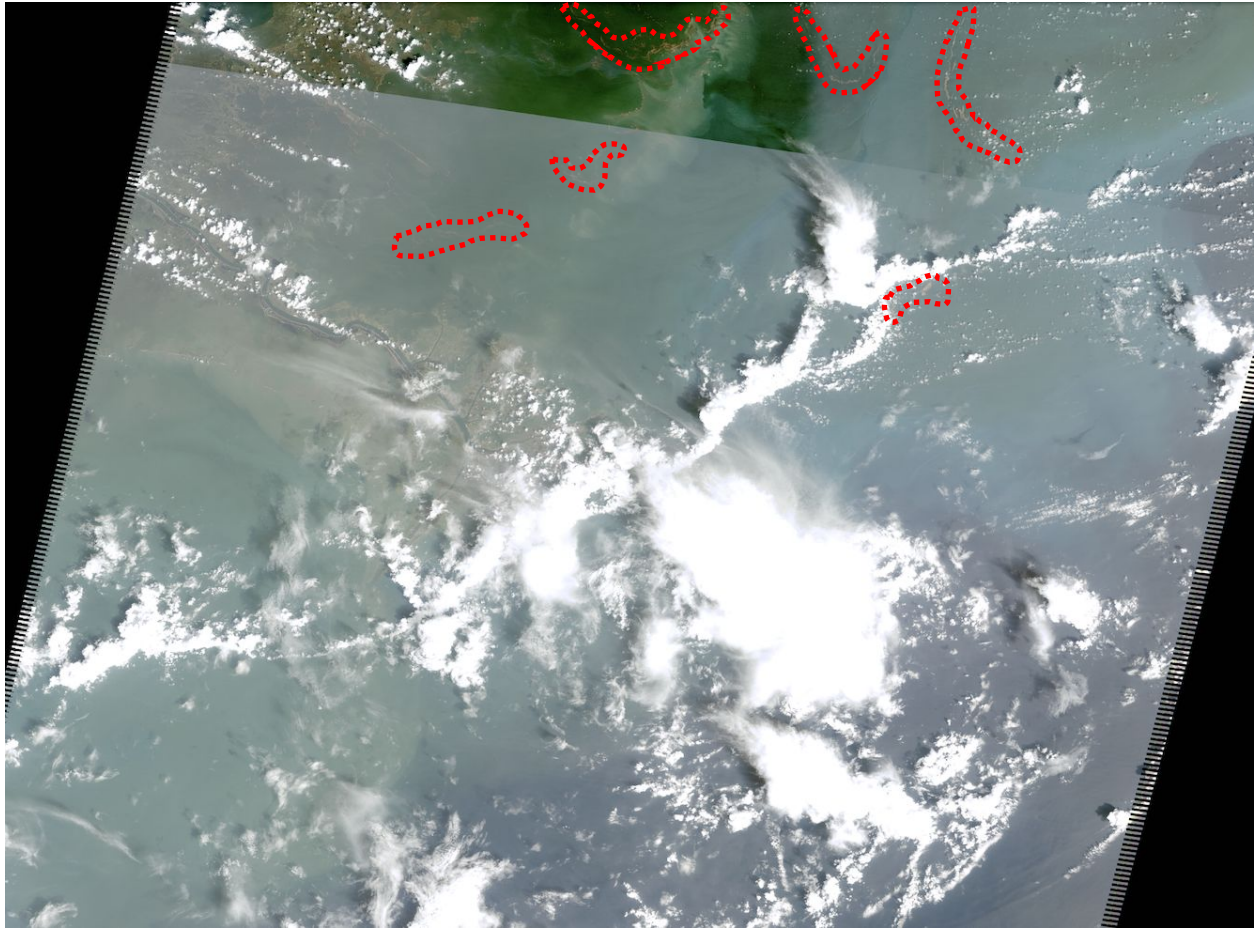


Fig. S6. Landsat-5 true color Red-Green-Blue (RGB) image on 31 August 2005 (a mosaic of two granules) showing numerous image features (red dotted outlines) that all appear brownish as opposed to greenish. These features can be visualized more clearly after enlarging the image. There are many weaker features that do not show on this image, but they are revealed clearly in the corresponding false-color RGB (FRGB) image where a near-infrared band is used as the green channel. Both RGB and FRGB images in the original (30-m) resolution can be found under <http://searobin.marine.usf.edu/~hu/scratch/Katrina/>.



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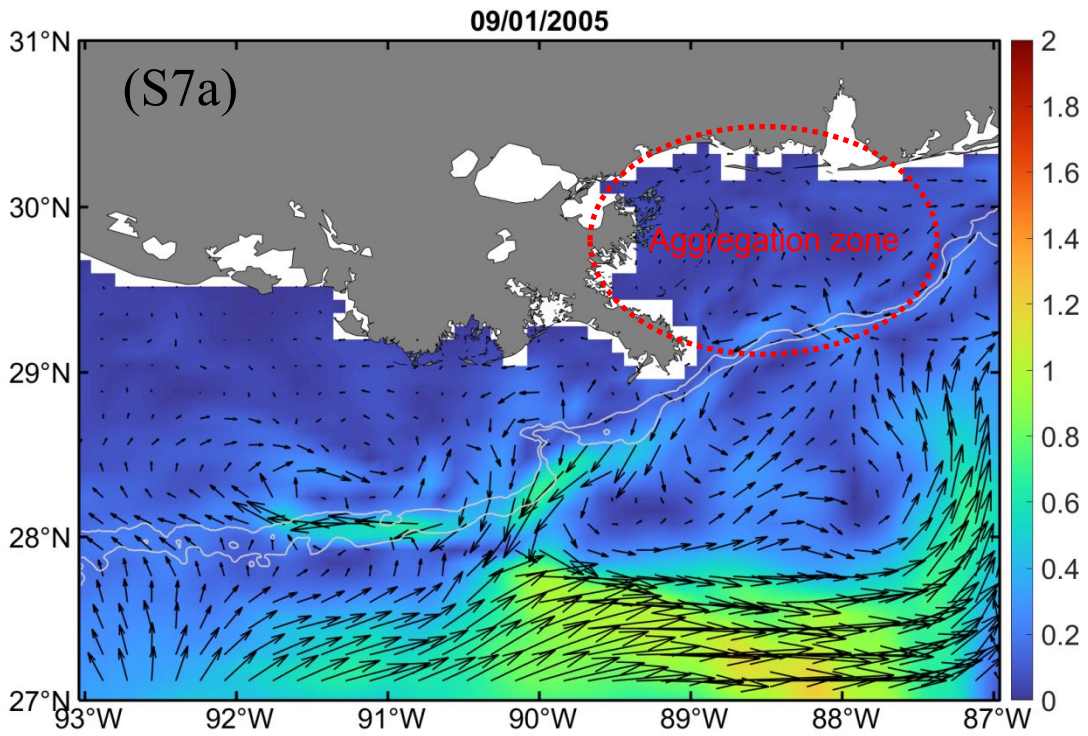
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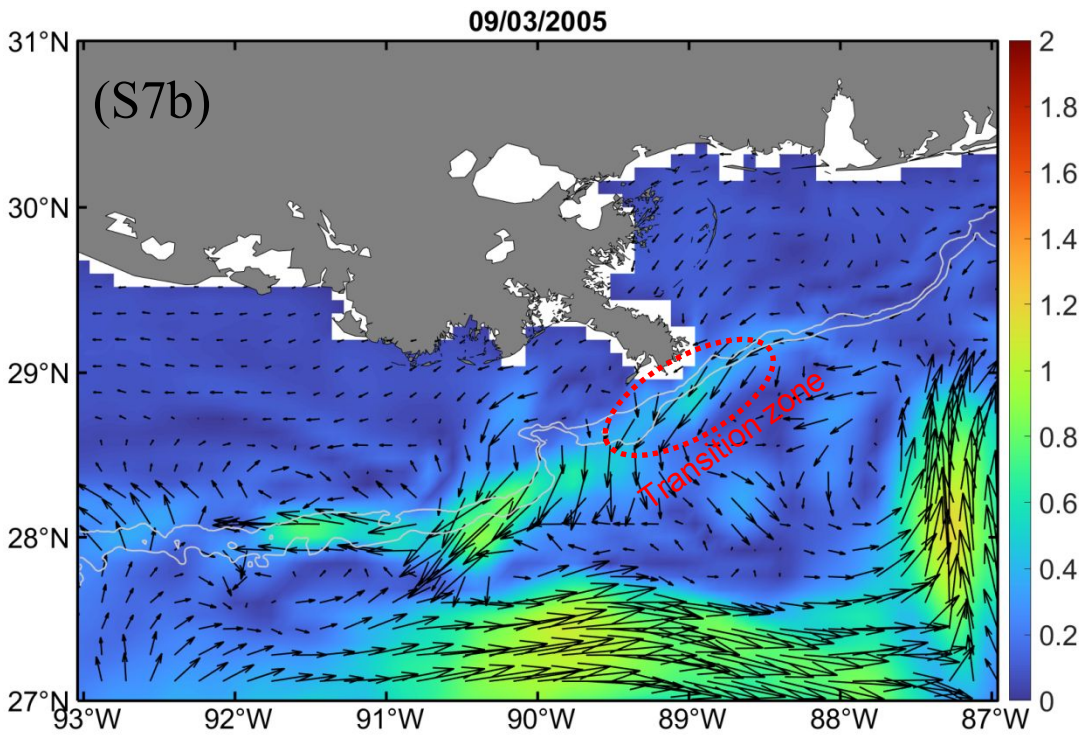
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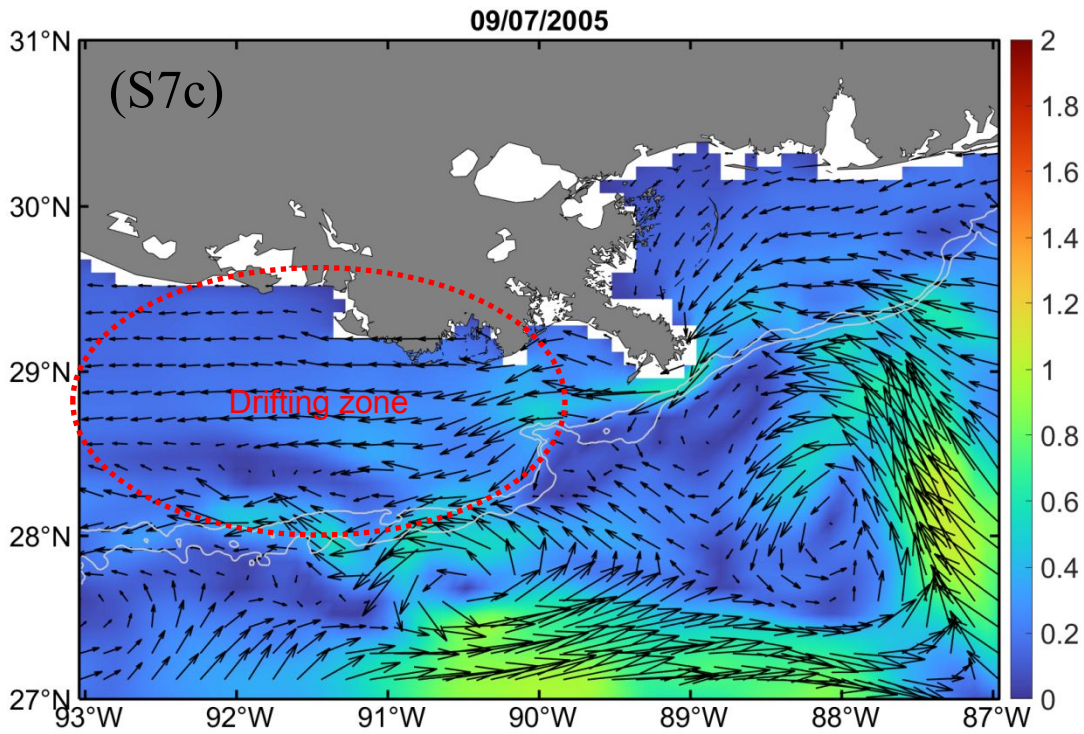
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595 Fig. S7. HYCOM surface currents in early September 2005. On September 1, relatively stagnant  
596 water was found to the east of the Mississippi River delta in an “aggregation zone” where most  
597 marine debris was found between August 30 and September 3 (S7a). Some of the debris was  
598 transported to the west after September 3 following the strong westward currents south of the  
599 Mississippi River mouth in a “transition zone” (S7b), and continued to drift westward following  
600 the dominant westward currents in a “drifting zone” (S7c). The white lines annotate the 100-m and  
601 200-m isobaths, respectively.

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