U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center

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Project Report

Date Submitted: 12/04/2018

Platform: NOAA Ship PISCES

Cruise Number: PC-12-04

Project Title: Southeast Fishery-Independent Survey (SEFIS)

Cruise Dates: 07/24/2012 - 08/23/2012

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Date: 07/15/2020

INTRODUCTION

The NOAA Ship *Pisces* departed Morehead City, NC, on 24 July 2012 at 1600 for a Southeast Fishery-Independent Survey (SEFIS) research cruise in continental shelf and shelf-break waters off the southeastern US. SEFIS was created by the National Marine Fisheries Service in 2010 and operates out of the Beaufort Laboratory. This survey was created to conduct applied fishery-independent sampling and related research focusing on the assessment of spatial variability in distribution and abundance of red snapper and other reef species within the snapper-grouper complex, via data collected from fish traps, video cameras, and acoustics. During this survey, chevron trap catches and associated underwater video recordings were collected from hardbottom habitats found between 34.33347°N and 35.03659 °N. A total of 328 stations were sampled with camera-trap arrays over 29 sea days between 21 and 90 m depths.

OBJECTIVES

1. Increase the spatial footprint and sample size of fishery-independent sampling in Raleigh Bay, North Carolina (between Cape Hatteras and Cape Lookout, NC). Baited chevron traps, with two mounted high-definition video cameras, were utilized for (a) hardbottom reef fish community assessments, (b) collection of reef fish for biological samples (i.e., otoliths and gonads), and (c) comparative gear sampling (cameras versus traps).

2. Use video cameras on chevron traps to address trap selectivity issues, locate and describe hardbottom habitats, and provide an additional index of abundance for stock assessments.

3. Map bottom habitats using multibeam sonar to improve survey design and to expand knowledge of hardbottom habitats in the southeast US.

4. Develop new, and refine existing, mapping protocols using the ME70 sonar equipment through collaborative efforts with colleagues from NOAA's Office of Coast Survey and the University of New Hampshire.

5. Use a CTD instrument package to collect environmental data (temperature, salinity, dissolved oxygen. turbidity) at camera-trap sampling locations, and XBTs to sample water temperature during multibeam mapping operations.

METHODS

Camera-Trap Sampling

Camera-trap gear consisted of two high definition video cameras mounted to a chevron fish trap. Chevron traps were composed of plastic-coated wire mesh. A Canon camera (model HF S200) was attached above the mouth of the trap, and a GoPro camera (model HD Hero® with a flat-lens housing) was attached above the nose of the trap (Figure 1). Traps were baited with Atlantic menhaden, *Brevoortia tyrannus*, and video cameras were set to record before deployment. Camera-traps were deployed at least 200 meters apart on suspected or known hardbottom habitats, and left to soak for approximately 90 minutes. Camera-traps were most often deployed in sets of six. A CTD cast (see environmental data collection) was conducted during the 90-minute soak time for each trap set. Fish catches were processed after trap retrieval. All fish were enumerated, weighed, and measured to the nearest millimeter. Individuals of select species (mostly species found in the snapper-grouper complex) were further processed for additional lengths and biological samples (otoliths, gonads, and DNA). Video files were downloaded and backed up on media storage devices. Biological samples and video files were brought to the Beaufort laboratory for further processing and analysis.

Environmental Data Collection

Environmental data were collected with Seabird "Conductivity, Temperature, and Depth" instrument package (CTD; model SBE 9) and Scientific Computer System (SCS) software. CTD casts were conducted near the middle of the camera-trap soak period; instruments were lowered to within 2 meters of the bottom. Numerous water profile measurements were taken, including temperature (◦C), salinity, dissolved oxygen (mg/L), average sound velocity (m/s), fluorescence (mg/m^3), and beam transmission (%). CTD data were archived for further processing at the Beaufort laboratory. SCS software 4.0 was used to collected specific information for each fishing and CTD event, including soak time/cast duration as well as start and end latitude, longitude and depth (m). Expendable bathythermographs (XBTs) were deployed during the mapping shift to collect water column temperature data while the ship was underway.

Acoustic Data Collection

The Pisces ME70 multibeam sonar was used to create hydrographic maps for operational planning (e.g., select potential camera-trap site coordinates on unsampled hardbottom habitat) and future research uses. Areas for mapping were selected based on (1) hardbottom points provided to SEFIS by commercial and recreational fishermen, public sources, and other scientists, (2) hardbottom habitat predicted based on a model developed by Daniel Dunn, Duke University, and (3) efficient use of vessel time. Original ME70 data files (*.raw) were processed through proprietary MATLAB software products designed by George "Randy" Cutter (NOAA Fisheries, SWFSC) and Tom Webber (University of New Hampshire); these products derived hydrographic data (*.xyz or *.gsf format, respectively) from files collected in the ME70 "fisheries research mode." Bathymetry and backscatter were further processed via Caris HIPS and SIPS v7.1.2 and QPS Fledermaus v7.3.2. Potential camera-trap site coordinates were exported to ArcGIS (v9) and navigation software for planning and archiving.

SURVEY RESULTS

Camera-Trap Sampling

328 stations were sampled with camera-trap gear (Table 1, Figure 2). From these traps, 5254 fish from 33 taxa were collected and worked up for length frequency data (Table 2). Snapper and grouper species were further processed for otolith (n=199), gonad (n=193), and DNA (n=63) tissues. No traps were lost, but one Canon camera broke free of a trap and was not immediately found; approximately two weeks later, a beachcomber found the camera on Shackleford Banks and returned it to SEFIS in working order. A total of 80 red snapper were caught – 78 in chevron traps and 2 collected opportunistically with hook and line gear.

Environmental Data Collection

57 CTD casts (Table 1, Figure 2) and 89 XBT casts were conducted during the cruise. CTD data will be processed with Seabird SBE Data Processing software (version 7.2), and archived in a database at the NMFS-Beaufort Laboratory for future analysis.

Multibeam Acoustics Data Collection

Twenty-nine areas were mapped, totaling approximately 385 km^2 (Figure 3). Maps were compiled in an ArcGIS project. Multibeam maps were used to select trap-camera sampling sites, i.e., identifying hardbottom habitats. Multibeam data were archived on a server at the NMFS-Beaufort Laboratory for future analysis.

Table 1. Summary of station coordinates, depth (m), date and time for each fishing event (camera-trap, Gear=324; hook and line, Gear=014) and CTD cast (Gear=298) conducted on the PC-12-04 survey. Times were recorded in Coordinated Universal Time (UTC).

Collection	Gear	Date	Time	Latitude	Longitude	Depth
128001	324	7/26/2012	16:39	34.35895	-76.37723	24
128002	324	7/26/2012	16:44	34.35189	-76.37812	24
128003	324	7/26/2012	16:51	34.34733	-76.38067	24
128004	324	7/26/2012	16:58	34.34150	-76.37983	24
128005	324	7/26/2012	17:02	34.33803	-76.37993	24
128006	324	7/26/2012	17:07	34.33347	-76.37917	27
128007	298	7/26/2012	17:28	34.35867	-76.37089	25
128008	324	7/27/2012	12:04	34.56694	-76.21404	37
128009	324	7/27/2012	12:11	34.56709	-76.20443	37
128010	324	7/27/2012	12:19	34.56244	-76.19921	38
128011	324	7/27/2012	12:27	34.55858	-76.20615	37
128012	324	7/27/2012	12:34	34.56158	-76.21313	36
128013	324	7/27/2012	12:39	34.55769	-76.21619	36
128014	298	7/27/2012	12:51	34.56834	-76.20943	37
128015	324	7/27/2012	15:29	34.54779	-76.21651	38
128016	324	7/27/2012	15:34	34.54767	-76.21132	39
128017	324	7/27/2012	15:39	34.54688	-76.20413	40
128018	324	7/27/2012	15:45	34.54367	-76.20525	39
128019	324	7/27/2012	15:49	34.54292	-76.20872	39
128020	324	7/27/2012	15:53	34.53910	-76.21013	38
128021	298	7/27/2012	16:04	34.54959	-76.20604	39
128022	324	7/27/2012	18:18	34.53708	-76.21436	40
128023	324	7/27/2012	18:22	34.53421	-76.21095	41
128024	324	7/27/2012	18:27	34.53287	-76.21550	40
128025	324	7/27/2012	18:33	34.52777	-76.21413	39
128026	324	7/27/2012	18:38	34.52346	-76.21415	40
128027	324	7/27/2012	18:46	34.52435	-76.20246	40
128028	298	7/27/2012	18:50	34.52368	-76.19991	40
128029	324	7/28/2012	12:01	34.56890	-76.33132	25
128030	324	7/28/2012	12:04	34.56737	-76.33301	27
128031	324	7/28/2012	12:08	34.56530	-76.33192	28
128032	324	7/28/2012	12:13	34.56564	-76.33561	28
128033	324	7/28/2012	12:21	34.56335	-76.33510	26
128034	324	7/28/2012	12:24	34.56123	-76.33675	24
128035	298	7/28/2012	12:36	34.57111	-76.32918	26
128036	324	7/28/2012	14:20	34.55936	-76.33799	26
128037	324	7/28/2012	14:24	34.55719	-76.33831	24
128038	324	7/28/2012	14:30	34.55351	-76.33189	27
128039	324	7/28/2012	14:38	34.55351	-76.33968	27

128040	324	7/28/2012	14:45	34.55122	-76.33945	24
128041	324	7/28/2012	14:52	34.54911	-76.34148	27
128042	298	7/28/2012	15:02	34.56174	-76.33897	27
128043	324	7/28/2012	16:58	34.54628	-76.34154	24
128044	324	7/28/2012	17:03	34.54336	-76.34269	28
128045	324	7/28/2012	17:12	34.53394	-76.34615	24
128046	324	7/28/2012	17:17	34.53009	-76.34641	23
128047	324	7/28/2012	17:26	34.52888	-76.35260	23
128048	324	7/28/2012	17:29	34.52652	-76.35398	24
128049	298	7/28/2012	17:35	34.52519	-76.35484	25
128050	324	7/29/2012	12:01	34.58146	-75.80543	63
128051	324	7/29/2012	12:07	34.57951	-75.80962	63
128052	324	7/29/2012	12:11	34.57615	-75.80991	62
128053	324	7/29/2012	12:18	34.57721	-75.81557	61
128054	324	7/29/2012	12:27	34.56918	-75.81420	62
128055	324	7/29/2012	12:36	34.57156	-75.82379	62
128056	298	7/29/2012	12:48	34.56440	-75.81982	64
128057	324	7/29/2012	16:14	34.60561	-76.13645	39
128058	324	7/29/2012	16:19	34.60584	-76.14373	39
128059	324	7/29/2012	16:22	34.60591	-76.14713	39
128060	324	7/29/2012	16:25	34.60400	-76.14716	39
128061	324	7/29/2012	16:31	34.60358	-76.13895	40
128062	324	7/29/2012	16:33	34.60357	-76.13644	39
128063	298	7/29/2012	16:37	34.60253	-76.13459	39
128064	324	7/30/2012	12:03	34.56796	-75.87046	59
128065	324	7/30/2012	12:10	34.56276	-75.87278	58
128066	324	7/30/2012	12:14	34.56126	-75.87703	58
128067	298	7/30/2012	12:26	34.56567	-75.88042	57
128068	324	7/30/2012	14:33	34.57872	-75.82483	61
128069	324	7/30/2012	14:37	34.57648	-75.82762	62
128070	324	7/30/2012	14:41	34.57396	-75.83097	62
128071	324	7/30/2012	14:44	34.57401	-75.83360	63
128072	324	7/30/2012	14:48	34.57222	-75.83709	60
128073	324	7/30/2012	14:52	34.57154	-75.84071	62
128074	298	7/30/2012	15:04	34.58017	-75.84415	58
128075	324	7/30/2012	17:23	34.58322	-75.82127	62
128076	324	7/30/2012	17:30	34.58245	-75.82220	63
128077	324	7/30/2012	17:34	34.58026	-75.82367	64
128078	298	7/30/2012	17:40	34.57784	-75.82468	62
128079	324	8/1/2012	11:58	34.69431	-75.88077	39
128080	324	8/1/2012	12:02	34.69311	-75.87627	42
128081	324	8/1/2012	12:06	34.69353	-75.87399	42
128082	324	8/1/2012	12:11	34.69281	-75.87119	42
128083	324	8/1/2012	12:17	34.68761	-75.87295	41
128084	324	8/1/2012	12:20	34.68695	-75.87599	42

128085	298	8/1/2012	12:34	34.68702	-75.86890	41
128086	324	8/1/2012	14:38	34.70685	-75.86668	40
128087	324	8/1/2012	14:42	34.70615	-75.86266	41
128088	324	8/1/2012	14:46	34.70727	-75.85847	41
128089	324	8/1/2012	14:48	34.70889	-75.85550	41
128090	324	8/1/2012	14:55	34.70633	-75.85184	41
128091	324	8/1/2012	15:02	34.70358	-75.85738	42
128092	298	8/1/2012	15:07	34.70142	-75.85816	41
128093	324	8/1/2012	17:30	34.72656	-75.77090	41
128094	324	8/1/2012	17:40	34.72534	-75.75596	40
128095	324	8/1/2012	17:52	34.72900	-75.75903	40
128096	298	8/1/2012	18:00	34.72859	-75.76242	41
128097	324	8/2/2012	11:59	34.82397	-75.79403	33
128098	324	8/2/2012	12:02	34.82201	-75.79330	34
128099	324	8/2/2012	12:15	34.82022	-75.80419	35
128100	324	8/2/2012	12:19	34.81720	-75.80142	35
128101	324	8/2/2012	12:24	34.81449	-75.79474	34
128102	324	8/2/2012	12:26	34.81411	-75.79247	33
128103	298	8/2/2012	12:31	34.81443	-75.78811	32
128104	324	8/2/2012	16:35	34.86325	-75.53570	63
128105	324	8/2/2012	16:44	34.86317	-75.53239	58
128106	324	8/2/2012	16:48	34.86070	-75.53245	62
128107	324	8/2/2012	16:50	34.85830	-75.52978	58
128108	324	8/2/2012	16:53	34.85600	-75.52721	56
128109	324	8/2/2012	16:59	34.85497	-75.52619	59
128110	298	8/2/2012	17:12	34.85364	-75.52363	69
128111	324	8/3/2012	12:01	35.03013	-75.64496	31
128112	324	8/3/2012	12:06	35.03329	-75.64099	30
128113	324	8/3/2012	12:13	35.02990	-75.63714	31
128114	324	8/3/2012	12:23	35.02960	-75.62202	32
128115	324	8/3/2012	12:29	35.03659	-75.61886	32
128116	324	8/3/2012	12:36	35.03590	-75.61012	32
128117	298	8/3/2012	12:42	35.03331	-75.60921	32
128118	324	8/3/2012	16:22	34.91977	-75.50822	55
128119	324	8/3/2012	16:27	34.91730	-75.50824	55
128120	324	8/3/2012	16:33	34.91151	-75.51133	58
128121	324	8/3/2012	16:39	34.90698	-75.51516	58
128122	324	8/3/2012	16:43	34.90304	-75.51850	59
128123	324	8/3/2012	16:48	34.89903	-75.52248	58
128124	298	8/3/2012	16:56	34.89605	-75.52451	57
128125	324	8/3/2012	19:03	34.91492	-75.51002	55
128126	324	8/3/2012	19:14	34.90936	-75.51376	57
128127	324	8/3/2012	19:21	34.90564	-75.51733	56
128128	324	8/3/2012	19:30	34.90165	-75.52116	57
128129	298	8/3/2012	19:35	34.89921	-75.52010	60

128130	324	8/4/2012	12:00	35.01500	-75.46336	49
128131	324	8/4/2012	12:03	35.01304	-75.46712	49
128132	324	8/4/2012	12:08	35.01227	-75.46364	50
128133	324	8/4/2012	12:12	35.00926	-75.46082	51
128134	324	8/4/2012	12:17	35.00743	-75.46449	50
128135	324	8/4/2012	12:23	35.00477	-75.46241	50
128136	298	8/4/2012	12:29	35.00148	-75.46026	52
128137	324	8/4/2012	14:30	34.99759	-75.46622	51
128138	324	8/4/2012	14:35	34.99372	-75.46092	52
128139	324	8/4/2012	14:42	34.98646	-75.46265	53
128140	324	8/4/2012	14:44	34.98399	-75.46415	52
128141	324	8/4/2012	14:47	34.98197	-75.46335	53
128142	324	8/4/2012	14:51	34.97768	-75.46117	54
128143	298	8/4/2012	14:58	34.97186	-75.46077	59
128144	324	8/4/2012	17:29	34.99327	-75.45561	52
128145	324	8/4/2012	17:35	34.99747	-75.46097	50
128146	324	8/4/2012	17:39	34.99918	-75.45770	50
128147	324	8/4/2012	17:47	35.00084	-75.46410	50
128148	324	8/4/2012	17:55	35.00203	-75.45511	51
128149	324	8/4/2012	17:59	35.00507	-75.45408	50
128150	298	8/4/2012	18:14	34.98994	-75.45716	52
128151	324	8/5/2012	12:07	34.86864	-75.51723	60
128152	324	8/5/2012	12:11	34.86824	-75.52032	61
128153	324	8/5/2012	12:16	34.86573	-75.52590	58
128154	324	8/5/2012	12:20	34.86492	-75.52937	57
128155	324	8/5/2012	12:23	34.86320	-75.53051	58
128156	324	8/5/2012	12:28	34.86054	-75.52843	59
128157	298	8/5/2012	12:41	34.87093	-75.52579	69
128158	324	8/5/2012	14:57	34.85761	-75.52555	55
128159	324	8/5/2012	15:02	34.86002	-75.51999	60
128160	324	8/5/2012	15:07	34.86552	-75.51493	56
128161	324	8/5/2012	15:09	34.86745	-75.51270	56
128162	324	8/5/2012	15:13	34.87139	-75.51130	58
128163	324	8/5/2012	15:17	34.87193	-75.50738	58
128164	298	8/5/2012	15:28	34.87925	-75.50432	75
128165	324	8/9/2012	17:21	34.52279	-76.34917	25
128166	324	8/9/2012	17:25	34.52371	-76.35286	24
128167	324	8/9/2012	17:32	34.52040	-76.35383	23
128168	324	8/9/2012	17:35	34.52029	-76.34904	25
128169	324	8/9/2012	17:42	34.51792	-76.35072	24
128170	324	8/9/2012	17:45	34.51838	-76.35501	24
128171	298	8/9/2012	17:56	34.52374	-76.34743	25
128172	324	8/10/2012	12:06	34.58770	-76.31728	27
128173	324	8/10/2012	12:11	34.58806	-76.31310	27
128174	324	8/10/2012	12:15	34.58593	-76.30936	28

128175	324	8/10/2012	12:22	34.58609	-76.31509	28
128176	324	8/10/2012	12:26	34.58382	-76.31549	27
128177	324	8/10/2012	12:28	34.58189	-76.31409	27
128178	298	8/10/2012	12:33	34.57928	-76.31262	29
128179	324	8/10/2012	14:38	34.59634	-76.32706	26
128180	324	8/10/2012	14:42	34.59575	-76.32243	26
128181	324	8/10/2012	14:45	34.59393	-76.32092	26
128182	324	8/10/2012	14:48	34.59131	-76.32166	27
128183	324	8/10/2012	14:55	34.59488	-76.31430	27
128184	324	8/10/2012	14:58	34.59380	-76.31111	27
128185	298	8/10/2012	15:02	34.59136	-76.31012	28
128186	324	8/11/2012	13:27	34.61762	-76.16543	37
128187	324	8/11/2012	13:30	34.61487	-76.16479	38
128188	324	8/11/2012	13:32	34.61486	-76.16840	38
128189	324	8/11/2012	13:37	34.61311	-76.16462	38
128190	324	8/11/2012	13:39	34.61514	-76.16211	38
128191	324	8/11/2012	13:41	34.61605	-76.15888	38
128192	298	8/11/2012	13:45	34.61507	-76.15585	39
128193	324	8/11/2012	16:30	34.62405	-76.14664	38
128194	324	8/11/2012	16:33	34.62481	-76.14912	38
128195	324	8/11/2012	16:37	34.62629	-76.15287	38
128196	324	8/11/2012	16:40	34.62881	-76.15382	38
128197	324	8/11/2012	16:43	34.62976	-76.15662	39
128198	324	8/11/2012	16:46	34.62746	-76.15865	38
128199	298	8/11/2012	16:50	34.62511	-76.16045	37
128200	324	8/11/2012	19:13	34.60963	-76.19482	38
128201	324	8/11/2012	19:17	34.60716	-76.19487	38
128202	324	8/11/2012	19:20	34.60485	-76.19521	38
128203	324	8/11/2012	19:28	34.60724	-76.19949	37
128204	324	8/11/2012	19:31	34.60471	-76.19981	38
128205	324	8/11/2012	19:34	34.60202	-76.20013	39
128206	298	8/11/2012	19:40	34.59969	-76.20036	37
128207	324	8/12/2012	12:03	34.59942	-76.19642	37
128208	324	8/12/2012	12:05	34.59793	-76.19942	37
128209	324	8/12/2012	12:09	34.59523	-76.20160	37
128210	324	8/12/2012	12:12	34.59200	-76.20403	37
128211	324	8/12/2012	12:16	34.58903	-76.20072	37
128212	324	8/12/2012	12:21	34.59234	-76.19617	37
128213	298	8/12/2012	12:26	34.59252	-76.19354	37
128214	324	8/12/2012	14:22	34.60901	-76.17277	38
128215	324	8/12/2012	14:26	34.60627	-76.17102	38
128216	324	8/12/2012	14:28	34.60404	-76.17168	39
128217	324	8/12/2012	14:31	34.60094	-76.17099	39
128218	324	8/12/2012	14:36	34.60060	-76.17693	38
128219	324	8/12/2012	14:40	34.60316	-76.17822	38

128220	298	8/12/2012	14:44	34.60497	-76.17976	38
128221	324	8/12/2012	16:57	34.61846	-76.13358	40
128222	324	8/12/2012	16:59	34.62060	-76.13508	39
128223	324	8/12/2012	17:04	34.62287	-76.13759	39
128224	324	8/12/2012	17:08	34.62310	-76.13795	39
128225	324	8/12/2012	17:13	34.62212	-76.14865	39
128226	324	8/12/2012	17:18	34.61923	-76.14860	39
128227	298	8/12/2012	17:28	34.61700	-76.14700	39
128228	324	8/13/2012	12:02	34.82046	-76.02744	33
128229	324	8/13/2012	12:05	34.81853	-76.02995	33
128230	324	8/13/2012	12:10	34.81462	-76.03304	33
128231	324	8/13/2012	12:15	34.81371	-76.03751	33
128232	324	8/13/2012	12:21	34.81090	-76.04119	32
128233	324	8/13/2012	12:26	34.80825	-76.04469	32
128234	298	8/13/2012	12:31	34.80433	-76.04591	33
128235	324	8/13/2012	14:40	34.82925	-76.12143	25
128236	324	8/13/2012	14:48	34.82981	-76.12431	25
128237	324	8/13/2012	14:54	34.83101	-76.12640	24
128238	298	8/13/2012	14:58	34.83294	-76.12790	24
128239	324	8/13/2012	18:12	34.51583	-76.35473	24
128240	324	8/13/2012	18:15	34.51660	-76.35154	23
128241	324	8/13/2012	18:18	34.51455	-76.35035	24
128242	324	8/13/2012	18:21	34.51308	-76.35234	23
128243	324	8/13/2012	18:24	34.51388	-76.35551	24
128244	324	8/13/2012	18:29	34.51076	-76.35586	21
128245	298	8/13/2012	18:34	34.50830	-76.35558	22
128246	324	8/14/2012	11:59	34.61416	-75.79276	62
128247	324	8/14/2012	12:02	34.61229	-75.79528	60
128248	324	8/14/2012	12:04	34.61080	-75.79736	60
128249	324	8/14/2012	12:07	34.60861	-75.79949	61
128250	324	8/14/2012	12:15	34.61355	-75.79726	60
128251	324	8/14/2012	12:19	34.61655	-75.79414	60
128252	298	8/14/2012	12:26	34.61985	-75.78833	61
128253	324	8/14/2012	14:51	34.66012	-75.74197	59
128254	324	8/14/2012	14:56	34.65823	-75.74739	59
128255	324	8/14/2012	14:58	34.65602	-75.74982	59
128256	324	8/14/2012	15:01	34.65442	-75.75243	58
128257	324	8/14/2012	15:07	34.65374	-75.74913	59
128258	324	8/14/2012	15:10	34.65141	-75.75181	59
128259	298	8/14/2012	15:15	34.64851	-75.75128	60
128260	324	8/14/2012	17:18	34.67253	-75.73511	58
128261	324	8/14/2012	17:21	34.67223	-75.73814	58
128262	324	8/14/2012	17:25	34.66996	-75.73901	58
128263	324	8/14/2012	17:28	34.66723	-75.74179	58
128264	324	8/14/2012	17:42	34.66990	-75.73676	58

128265	324	8/14/2012	17:44	34.66797	-75.73812	58
128266	298	8/14/2012	17:48	34.66663	-75.74079	58
128267	324	8/16/2012	11:29	34.93687	-75.45428	64
128268	324	8/16/2012	11:33	34.93431	-75.45399	65
128269	324	8/16/2012	11:36	34.93345	-75.45686	62
128270	324	8/16/2012	11:40	34.93053	-75.45744	66
128271	324	8/16/2012	11:42	34.92910	-75.45999	63
128272	324	8/16/2012	11:45	34.92716	-75.46259	62
128273	298	8/16/2012	11:55	34.92524	-75.46027	69
128274	324	8/16/2012	13:52	34.93145	-75.46088	62
128275	324	8/16/2012	13:58	34.92747	-75.46595	63
128276	324	8/16/2012	14:03	34.92490	-75.47005	63
128277	324	8/16/2012	14:11	34.92474	-75.46340	65
128278	324	8/16/2012	14:15	34.92161	-75.46613	66
128279	324	8/16/2012	14:18	34.92067	-75.47032	65
128280	298	8/16/2012	14:24	34.91806	-75.46813	70
128281	324	8/16/2012	17:41	34.93579	-75.45878	64
128282	324	8/16/2012	17:45	34.93288	-75.46219	61
128283	324	8/16/2012	17:49	34.93062	-75.46294	63
128284	324	8/16/2012	17:54	34.92607	-75.46443	61
128285	324	8/16/2012	17:58	34.92353	-75.46779	63
128286	324	8/16/2012	18:02	34.92235	-75.47113	63
128287	298	8/16/2012	18:08	34.92358	-75.47498	65
128288	324	8/17/2012	12:00	34.92673	-75.51269	56
128289	324	8/17/2012	12:04	34.92352	-75.51426	55
128290	324	8/17/2012	12:08	34.92083	-75.51675	55
128291	324	8/17/2012	12:11	34.92028	-75.52119	54
128292	324	8/17/2012	12:14	34.91849	-75.52328	55
128293	324	8/17/2012	12:17	34.91853	-75.52631	54
128294	298	8/17/2012	12:23	34.92084	-75.52951	54
128295	324	8/17/2012	14:26	34.92695	-75.51721	54
128296	324	8/17/2012	14:30	34.92481	-75.52017	54
128297	324	8/17/2012	14:33	34.92253	-75.52323	53
128298	324	8/17/2012	14:35	34.92116	-75.52589	53
128299	324	8/17/2012	14:42	34.92384	-75.52863	53
128300	324	8/17/2012	14:46	34.92028	-75.53131	52
128301	298	8/17/2012	14:51	34.91985	-75.53468	52
128302	324	8/17/2012	17:04	34.92463	-75.51033	54
128303	324	8/17/2012	17:10	34.92206	-75.50672	55
128304	324	8/17/2012	17:13	34.92211	-75.50359	56
128305	324	8/17/2012	17:15	34.92365	-75.50117	57
128306	324	8/17/2012	17:19	34.92254	-75.49714	59
128307	324	8/17/2012	17:25	34.91887	-75.49851	60
128308	298	8/17/2012	17:33	34.91713	-75.49947	60
128309	324	8/19/2012	12:01	34.48296	-75.88543	76

128310	324	8/19/2012	12:05	34.48392	-75.88047	76
128311	324	8/19/2012	12:10	34.48420	-75.87347	84
128312	324	8/19/2012	12:13	34.48594	-75.86929	89
128313	324	8/19/2012	12:16	34.48843	-75.86762	90
128314	324	8/19/2012	12:18	34.49079	-75.86499	90
128315	298	8/19/2012	12:27	34.49428	-75.86676	83
128316	324	8/19/2012	14:39	34.47240	-75.90270	74
128317	324	8/19/2012	14:42	34.47372	-75.89869	75
128318	324	8/19/2012	14:46	34.47720	-75.89673	74
128319	324	8/19/2012	14:50	34.47992	-75.89341	74
128320	324	8/19/2012	14:54	34.48341	-75.89053	74
128321	324	8/19/2012	15:01	34.48784	-75.88350	74
128322	298	8/19/2012	15:06	34.48658	-75.88051	76
128323	324	8/19/2012	17:45	34.44772	-75.92538	74
128324	324	8/19/2012	17:50	34.45111	-75.92287	73
128325	324	8/19/2012	17:55	34.45524	-75.91878	73
128326	324	8/19/2012	18:00	34.46003	-75.91661	72
128327	324	8/19/2012	18:05	34.46088	-75.91251	72
128328	324	8/19/2012	18:11	34.46612	-75.91019	73
128329	298	8/19/2012	18:17	34.46812	-75.91126	72
128330	324	8/20/2012	12:21	34.47991	-75.87424	89
128331	324	8/20/2012	12:26	34.47605	-75.87868	86
128332	324	8/20/2012	12:31	34.47079	-75.88287	89
128333	324	8/20/2012	12:35	34.46792	-75.88681	85
128334	324	8/20/2012	12:43	34.46349	-75.89642	81
128335	324	8/20/2012	12:50	34.45911	-75.90376	81
128336	298	8/20/2012	12:56	34.45617	-75.90623	84
128337	324	8/20/2012	15:01	34.46855	-75.89253	81
128338	324	8/20/2012	15:05	34.47073	-75.88838	82
128339	324	8/20/2012	15:10	34.47433	-75.88360	83
128340	324	8/20/2012	15:14	34.47745	-75.88199	80
128341	324	8/20/2012	15:19	34.48178	-75.87863	80
128342	324	8/20/2012	15:22	34.48535	-75.87736	77
128343	298	8/20/2012	17:33	34.47809	-75.88039	80
124810	014	8/21/2012	20:00	34.55228	-76.22808	38
128344	324	8/21/2012	11:59	34.56686	-76.22279	37
128345	324	8/21/2012	12:03	34.56673	-76.22844	37
128346	324	8/21/2012	12:07	34.56408	-76.23289	38
128347	324	8/21/2012	12:10	34.56132	-76.23540	37
128348	324	8/21/2012	12:18	34.56137	-76.22805	38
128349	324	8/21/2012	12:24	34.56183	-76.22341	39
128350	298	8/21/2012	12:30	34.56199	-76.22037	38
128351	324	8/21/2012	14:46	34.54698	-76.23751	38
128352	324	8/21/2012	14:51	34.55017	-76.23496	38
128353	324	8/21/2012	14:53	34.55180	-76.23174	39

128354	324	8/21/2012	14:56	34.55228	-76.22808	39
128355	324	8/21/2012	14:59	34.55242	-76.22414	39
128356	324	8/21/2012	15:03	34.54974	-76.22045	39
128357	298	8/21/2012	15:08	34.54762	-76.21793	39
128358	324	8/21/2012	17:56	34.56208	-76.25050	36
128359	324	8/21/2012	17:59	34.56073	-76.24747	36
128360	324	8/21/2012	18:03	34.55745	-76.24545	37
128361	324	8/21/2012	18:08	34.55642	-76.24089	37
128362	324	8/21/2012	18:10	34.55628	-76.23759	37
128363	324	8/21/2012	18:14	34.55825	-76.23312	37
128364	298	8/21/2012	18:19	34.56015	-76.23003	38
128365	324	8/22/2012	11:56	34.52684	-76.25508	36
128366	324	8/22/2012	11:58	34.52580	-76.25838	37
128367	324	8/22/2012	12:02	34.52431	-76.26278	36
128368	324	8/22/2012	12:06	34.52080	-76.26262	37
128369	324	8/22/2012	12:09	34.51781	-76.26206	37
128370	324	8/22/2012	12:14	34.51876	-76.25769	37
128371	298	8/22/2012	12:19	34.51796	-76.25485	37
128372	324	8/22/2012	14:21	34.53977	-76.25158	37
128373	324	8/22/2012	14:25	34.54335	-76.24858	37
128374	324	8/22/2012	14:29	34.54546	-76.24416	37
128375	324	8/22/2012	14:33	34.54969	-76.24182	37
128376	324	8/22/2012	14:36	34.55193	-76.23860	38
128377	324	8/22/2012	14:39	34.55451	-76.23439	37
128378	298	8/22/2012	14:45	34.55401	-76.23058	38
128379	324	8/22/2012	17:09	34.58153	-76.21148	37
128380	324	8/22/2012	17:14	34.57874	-76.21672	37
128381	324	8/22/2012	17:17	34.57721	-76.21983	37
128382	324	8/22/2012	17:23	34.57374	-76.22516	37
128383	324	8/22/2012	17:26	34.57138	-76.22683	37
128384	324	8/22/2012	17:29	34.57016	-76.22499	38
128385	298	8/22/2012	17:34	34.56978	-76.22017	37

Table 2. Taxa, listed in decreasing order of abundance, caught in chevron trap gear on the PC-12-04 survey. Total abundance and number of fish sampled for otoliths, gonads, and DNA tissue are listed for each taxon.

Scientific Name	Common Name	Total Abundance	Otoliths	Histology	DNA
Centropristis striata	Black Sea Bass	2874	50	50	
Haemulon aurolineatum	Tomtate	861			
Balistes capriscus	Gray Triggerfish	452			
Stenotomus sp.		435			
Centropristis ocyurus	Bank Sea Bass	143			
Diplodus holbrookii	Spottail Pinfish	131			
Lutjanus campechanus	Northern Red Snapper	78	78	78	50
Stephanolepis hispida	Planehead Filefish	55			
Pagrus pagrus	Red Porgy	51			
Pareques umbrosus	Cubbyu	35			
Mycteroperca microlepis	Gag	35	35	29	12
Diplectrum formosum	Sand Perch	21			
Caulolatilus microps	Grey Tilefish	20	20	20	
Rhomboplites aurorubens	Vermilion Snapper	16			
Epinephelus morio	Red Grouper	10	10	10	
Seriola rivoliana	Almaco Jack	7			
Mycteroperca phenax	Scamp	5	5	5	
Muraena retifera	Reticulate Moray	4			
Orthopristis chrysoptera	Pigfish	3			
Haemulon plumierii	White Grunt	3			
Paralichthys tropicus	Tropical Flounder	2			
Opsanus sp.		2			
Rypticus maculatus	Whitespotted Soapfish	2			
Gymnothorax moringa	Spotted Moray	1			
Lagodon rhomboides	Pinfish	1			
Paralichthys albigutta	Gulf Flounder	1			
Epinephelus niveatus	Snowy Grouper	1	1	1	1
Paralichthys dentatus	Summer Flounder	1			
Gymnothorax saxicola	Honeycomb Moray	1			
Centropristis philadelphica	Rock Sea Bass	1			
Conger oceanicus	Conger Eel	1			
Calamus leucosteus	Whitebone Porgy	1			

Figure 1. Chevron trap with video camera gear used to sample reef fish on the PC-12-04 survey.

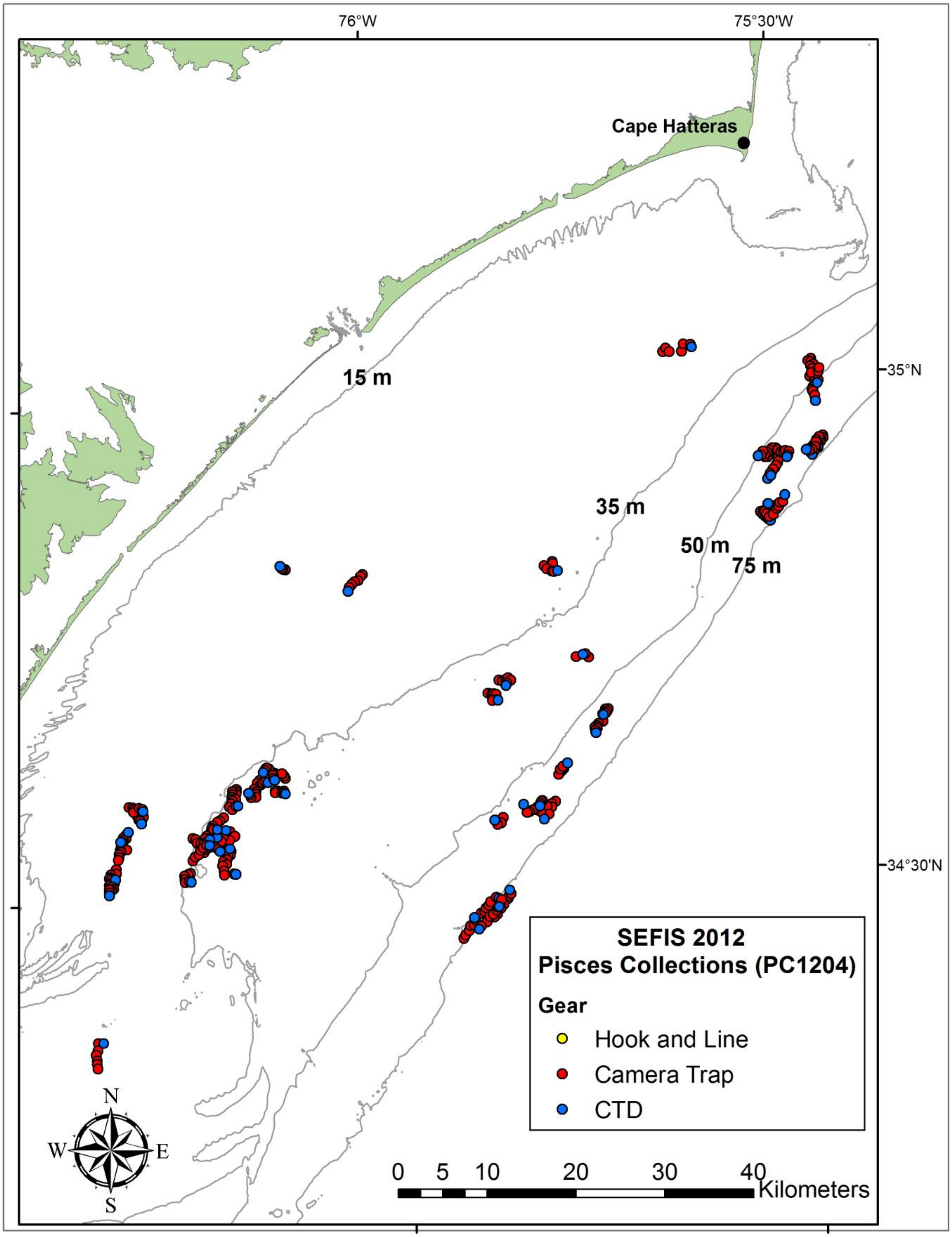

Figure 2. Locations of stations sampled with camera-trap and CTD gear on the PC-12-04 survey. Note that symbols overlap in many cases.

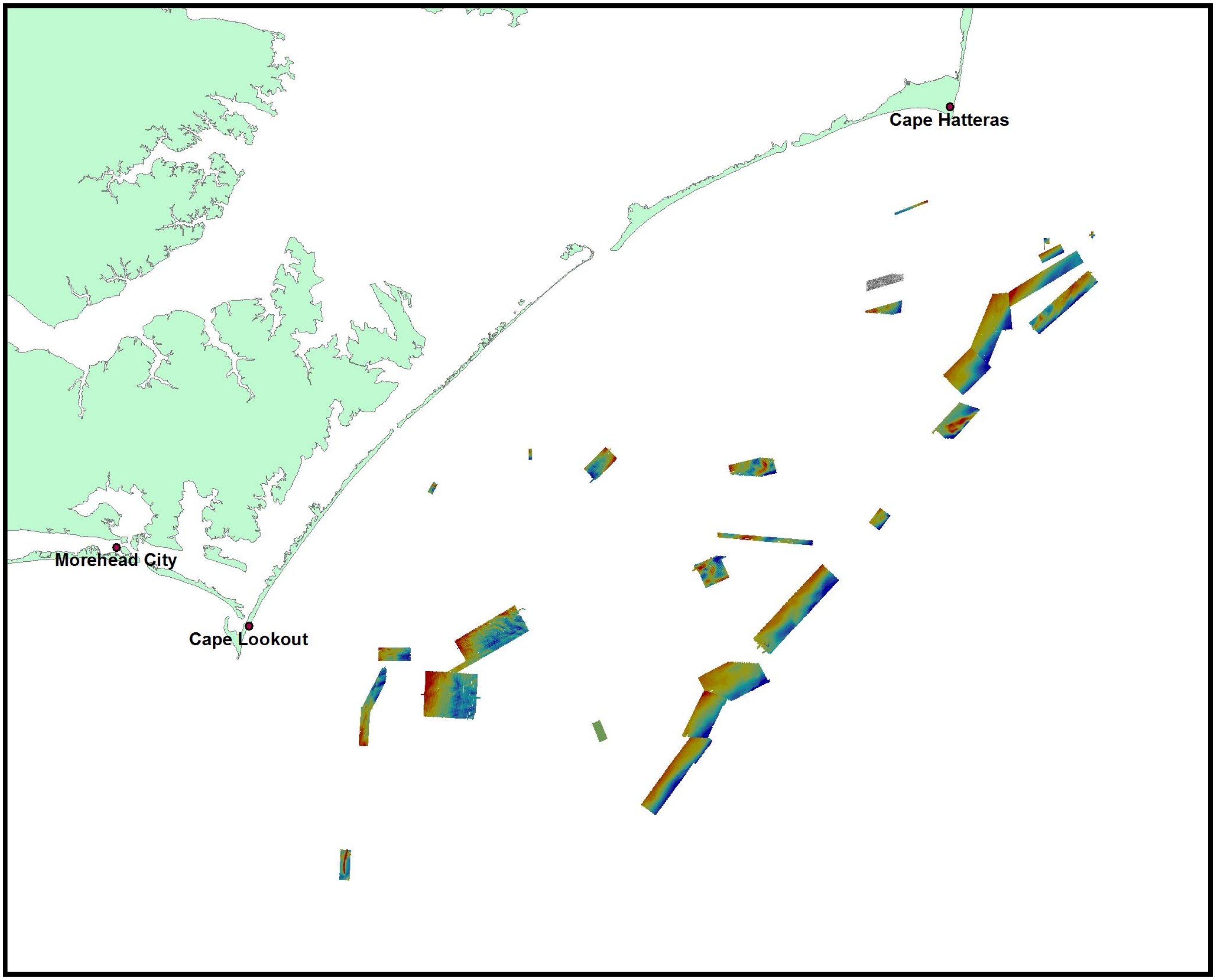

Figure 3. Locations mapped with multibeam acoustic gear on the PC-12-04 survey.

CRUISE PARTICIPANTS

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Leg 1
Zeb Schobernd / Chief Scientist / JHT, Inc.
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Dawn Glasgow / Scientist-Video Camera Watch / MARMAP-SCDNR
David Berrane / Scientist-Deck watch / JHT, Inc.
Matthew Wilson / Scientist / NOS/OCS/HSD/AHB
Jim Niergarth / Scientist / College of Charleston
Ralph Morris / Scientist / College of Charleston
Glen Rice* / Scientist / NOS/OCS/CSDL
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* Only participated in the first 3 days of the cruise to assist with ME70 operation.

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Cruise Report Prepared by: Nate Bacheler, Warren Mitchell, and Christina Schobernd

Note: The use of trade, product, industry, or firm names, products, software, or models, whether commercially available or not, is for informative purposes only and does not constitute an endorsement by the U.S. Government or the National Oceanic and Atmospheric Administration.