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Journal of Geographical Research
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REVIEW

Wave Dynamics Investigation in Scope of Coastal Processes

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ARTICLE INFO

Article history
Received: 12 December 2018
Accepted: 26 February 2019
Published: 5 March 2019

Keywords:
Coastal

ABSTRACT

In this research it is established a classification system by which to characterize atmospheric conditions, specifically those related to winter extra tropical storms and fair weather. Numerous classification schemes have been proposed to categorize atmospheric conditions in a variety of environments-however, since meteorological processes are inherently complicated, these are of necessity based on criteria that suit a particular purpose. The system employed in this project was ultimately designed to differentiate between: 1. fair weather and storm conditions; 2. different phases of extratropical storms; 3. extratropical storms of different intensities and synoptic types.

1. Introduction

It is useful to establish a classification system by which to characterize atmospheric conditions, specifically those related to winter extra tropical storms and fair weather. Numerous classification schemes have been proposed to categorize atmospheric conditions in a variety of environments-however, since meteorological processes are inherently complicated, these are of necessity based on criteria that suit a particular purpose. The system employed in this project was ultimately designed to differentiate between: 1. fair weather and storm conditions; 2. different phases of extratropical storms; 3. extratropical storms of different intensities and synoptic types. As such, it draws upon several classification systems suggested in the literature, as well as criteria specific to the research, and employs both hourly wind velocity data and daily national weather maps [1,2].

2. Wave Dynamics and Wind Waves

2.1 Wave Dynamics and Classifying Waves

The transfer of energy from water particle to water particle in the circular paths, or orbits, transmits wave energy across the ocean surface and causes the waveform to move. This kind of wave is known as an orbital wave which is a wave in that particles of the medium (water) move in closed circles as the wave passes. Orbital sea waves occur at the boundary between two media, between air and water and between layers of water of different densities. These waves are a type of progressive wave, because the waveform moves forward. Sea waves have distinct parts. The wave crest is the highest part of the wave above average water level; the wave trough is the valley between wave crests below average water level. Wave height is the vertical distance between a wave crest and the adjacent trough, while wavelength is the horizontal distance between two successive wave crests. The time it takes for two successive wave crests or troughs to pass a fixed point, usually measured in seconds, is known as the wave period. Wave frequency is the number of waves

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DOI: https://doi.org/ 10.30564/jgr.v2i1.405

passing a fixed point per second. Frequency is the inverse of period. The circular motion of water particles at the surface of a wave continues underwater. Water particles move diminishes rapidly with depth. For all practical purposes, wave motion in deep-water waves is negligible below a depth of one-half the wavelength. Since most sea waves have moderate wavelengths, the circular disturbance of the ocean that propagates these waves affects only the uppermost layer of water [3-6].

Sea waves are classified by the disturbing force that creates them, the extent to which the disturbing force continues to influence the waves once they are formed, the restoring force that tries to flatten them, and their wavelength [7].

Energy that causes sea waves to form is called a disturbing force. Wind blowing across the sea surface provides the disturbing force for wind waves. Arrival of a storm surge or seismic sea wave in an enclosed harbour or bay, or a sudden change in atmospheric pressure is the disturbing force for the resonant rocking of water known as a seiche. Landslides, volcanic eruptions, and faulting of the seafloor associated with earthquakes are the disturbing forces for seismic sea waves which is also known as tsunami. The disturbing forces for tides are changes in the direction of gravitational forces among the Earth, moon, and sun, combined with Earth's rotation [8-11].

A wave that is formed and then propagates across the sea surface without the further influence of the force that formed it is known as a free wave. When wind waves move away from the storm that created them, or when the storm ceases, they continue without the injection of additional wind energy. Likewise, the tsunami waves caused by submerged landslides or earthquakes continue to move across the ocean surface long after the movement of the landslide or earthquake has stopped [12].

Restoring force is the dominant force trying to return the water surface to flatness after a wave has formed in it. If the restoring force of a wave were quickly and fully successful, a disturbed sea surface would immediately become smooth, and the energy of the embryo wave would be dissipated as heat. Waves continue after they form because the restoring force overcompensates and causes oscillation. There are also capillary waves and gravity waves. The capillary waves are the first waves to form when the wind blows. These small ripples are important in transferring energy from air to water to drive sea currents. Since the circular motion of water molecules in a wave is nearly friction free, gravity waves can travel across thousands of miles of ocean surface without disappearing, eventually to break on a distant shore[13].

Wavelength is a direct measure of wave size. There is the relation between disturbing and restoring forces, period, and the relative amount of energy present in the ocean's surface for each wave type. More energy is stored in wind waves than in any of the other wave types[14].

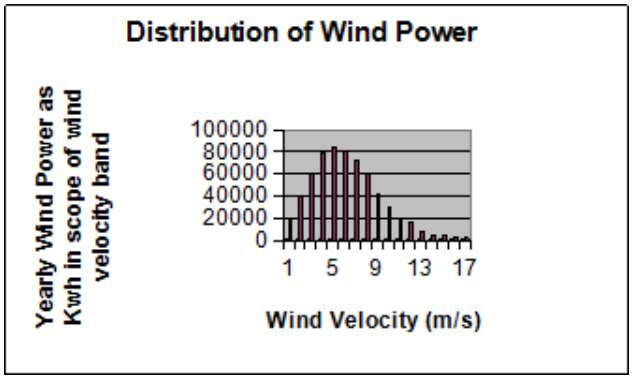

Figure. 1 The Distribution of wind power [16]

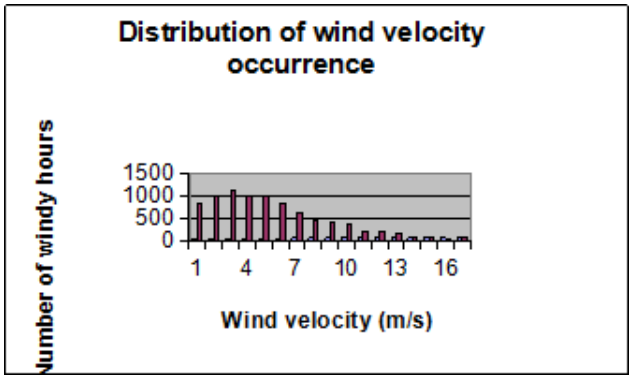

Figure 2. The distribution of wind velocity occurrence (Weibull-Probability Distribution)

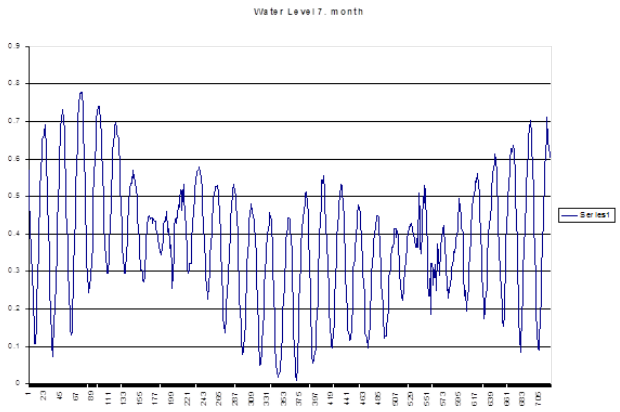

Figure 3. Results for Signal Processing Toolbox of Water Level at 7. month at Gulf of Mexico[16]

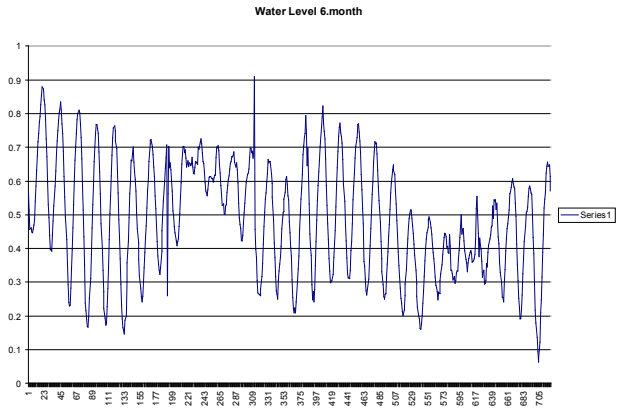

Figure 4. Results for Signal Processing Toolbox of Water Level at 6. month at Gulf of Mexico[16]

3. Result for the Coastal Processes

The Earth's climate has changed with time, as has its atmospheric composition, its seawater chemistry, the size and positions of its continents, and its life-forms. The story of the Earth is the story of change and chance; its history is written in the rocks, the water, and the genes of the millions of organisms that have evolved on land and in sea. Change is now progressing at an unnatural rate, and these human-induced changes are imposing stress on natural systems. In the last century the human beings have developed the physical, chemical, and biological processes to destroy the world ocean and the atmosphere. We need to act to moderate the negative effects of the destroying environmental. This is the reason for investigation the coastal processes like hydro dynamical forces and atmospheric circulations and other processes involving the sea physics.

4. Conclusion

As researcher it is needed also some new innovation about Earth Structure and Plate Tectonics, Sediments, Sea Physics, Atmospheric Circulation ,Wave Dynamics and Wind Waves, Hydrodynamic Forces, Offshore and Onshore Structures, Tsunami, Seiches, and Tides, Coasts, Simulation Theory, Modelling and Experimental Tests and Environmental Concerns

Appendix

Data for Coastal Processes as an Example

Northing	Easting	Elevation	Description	Northing	Easting	Elevation	Description	Northing	Easting	Elevation	Description	Northing	Easting	Elevation	Description	Northing	Easting	Elevation	Description		Northing	Easting	Elevation	Description	Northing	Easting	Elevation	Description
5000	5000	100	BM	5000	5000	100, 0079	BM	5000	5000	100, 031	MON	5000	5000	100, 15	START	5000	5000	100, 4674	START		5000	5000	99, 96186	BM	5000	5000	99, 91852	OCC
4999, 915	4985, 882	101, 2856	BM	4999, 973	4985, 837	101, 2858	BM	4999, 96	4985, 884	101, 2832	BM-TOP	5000	4985, 823	101, 2848	BM	5000, 002	4985, 804	101, 2858	MON		4999, 988	4985, 864	101, 2791	BM	5000, 056	4985, 725	101, 2833	WEST-PIPE
4999, 933	4985, 895	101, 2844	BM	4999, 956	4985, 883	101, 2837	BM	4999, 989	4985, 837	101, 2875	BM-TOP	5000, 024	4985, 81	101, 2859	BM	5000, 002	4985, 811	101, 2855	MON		4999, 927	4985, 763	101, 2892	BM	4999, 984	4985, 73	101, 2877	WEST-PIPE
4999, 992	4985, 799	101, 2865	BM	4999, 957	4985, 821	101, 2869	BM	4999, 969	4985, 856	101, 2858	BM-TOP	5000, 023	4985, 812	101, 2857	BM	5000, 002	4985, 816	101, 2852	MON		4999, 996	4985, 777	101, 2883	BM	4965, 675	4965, 256	99, 53965	C1
5000, 024	4985, 786	100, 3995	BBM	5000, 126	4985, 808	100, 3771	BM GROUND	4961, 522	4962, 344	99, 54422	C1	4962, 014	4962, 432	99, 57083	C1	4962, 035	4962, 237	99, 48524	L1	99, 80999	5000, 031	4985, 751	100, 3756	BMG	4965, 934	4965, 056	100, 1658	C1
4968, 74	4965, 119	100, 2475	C1	4961, 608	4962, 027	99, 55238	C1	4962, 132	4962, 505	99, 62539	C1	4962, 489	4962, 461	99, 71262	C1	4962, 717	4962, 277	99, 54094	L1		4962, 554	4962, 539	99, 4915	C1	4966, 569	4965, 009	100, 1872	C1
4964, 659	4963, 284	100, 1952	C1	4962, 023	4962, 249	99, 60162	C1	4962, 214	4962, 538	100, 0517	C1	4962, 674	4962, 403	100, 1251	C1	4962, 904	4962, 441	100, 0267	L1		5000, 805	5000, 34	105, 114	C1	4968, 699	4964, 957	100, 2317	C1
4962, 3	4962, 276	100, 1202	C1	4962, 333	4962, 329	100, 0777	C1	4964, 397	4963, 339	100, 2032	C1	4964, 433	4963, 292	100, 2241	C1	4964, 419	4963, 225	100, 1871	L1		5000, 78	5000, 33	104, 9598	C1	5008, 196	4964, 537	100, 1956	C1
4962, 051	4962, 073	99, 54739	C1	4964, 728	4963, 224	100, 2216	C1	4968, 386	4965, 104	100, 2285	C1	4968, 428	4965, 12	100, 2515	C1	4968, 461	4965, 032	100, 2258	L1		5000, 716	5000, 308	104, 5619	C1	5009, 77	4963, 993	100, 0397	C1
4988, 831	4980, 031	99, 96839	C2	4968, 729	4964, 933	100, 2437	C1	4989	4979, 867	99, 91924	C2	4990, 653	4978, 672	100, 076	C2	5015, 028	4976, 323	100, 3081	L2		5000, 541	5000, 3	103, 8157	C2	5009, 975	4963, 77	99, 60242	C1
4991, 442	4977, 912	100, 2056	C2	4988, 287	4979, 981	99, 89547	C2	4991, 005	4978, 295	100, 1614	C2O	4991, 614	4977, 816	100, 2313	C2	5019, 559	4976, 426	100, 252	L2		5000, 567	5000, 313	103, 7793	C2	5009, 951	4963, 23	99, 4374	C2
4993, 895	4976, 011	100, 4711	C2	4990, 266	4978, 833	100, 1118	C2	4995, 686	4974, 478	100, 6605	C2O	4991, 699	4977, 774	100, 3015	C2	5022, 46	4976, 396	100, 2095	L2		5000, 532	5000, 288	103, 5276	C2	5009, 37	4963, 583	100, 1382	C2
4995, 909	4974, 391	100, 5891	C2	4991, 677	4977, 838	100, 2294	C2	4998, 354	4972, 343	100, 6127	C2	4995, 714	4974, 533	100, 6613	C2	5024, 181	4976, 459	100, 0533	L2		5000, 485	5000, 262	103, 2137	C2	5008, 211	4964, 524	100, 2019	C2

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DOI: https://doi.org/ 10.30564/jgr.v2i1.405

4998, 447	4972, 324	100, 6291	C2	4992, 559	4977, 095	100, 3968	C2	4998, 597	4972, 146	100, 4948	C2	4998, 379	4972, 261	100, 5993	C2	5024, 497	4976, 386	99, 71318	L2		5000, 415	5000, 214	102, 7273	C2	5004, 881	4967, 172	100, 2717	C2
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4999, 103	4971, 748	100, 405	C2	4998, 484	4972, 3	100, 6112	C2O	5004, 599	4967, 224	100, 295	C2	4998, 891	4971, 932	100, 4552	C2	4989, 128	4979, 635	99, 87739	L3		5000, 36	5000, 171	102, 303	C2	4995, 97	4974, 37	100, 7358	C2
5004, 843	4967, 161	100, 2849	C2	4998, 708	4972, 139	100, 4413	C2O	5007, 889	4964, 574	100, 2105	C2	5004, 67	4967, 298	100, 2962	C2	4991, 064	4978, 643	100, 0786	L3		5000, 356	5000, 166	102, 2661	C2	4993, 231	4976, 442	100, 218	C2
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5011, 628	4963, 359	100, 0214	C2	5008, 207	4964, 579	100, 2053	C2	5011, 884	4961, 874	99, 60119	C2	5011, 312	4961, 991	99, 7151	C2	4998, 923	4971, 927	100, 4469	L3		5000, 464	5000, 285	103, 1737	C3	5023, 296	4976, 18	99, 58252	C3
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DOI: https://doi.org/ 10.30564/jgr.v2i1.405

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DOI: https://doi.org/ 10.30564/jgr.v2i1.405

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5017, 007	5112, 748	100, 1106	C15	4996, 414	5115, 713	100, 3615	C15	5006, 355	5114, 068	100, 2886	C15	5012, 643	5113, 114	100, 2521	C16	4998, 694	5115, 113	100, 4164	L14		4989, 056	4975, 534	100, 2189	B1	4972, 866	4970, 465	99, 67449	SBAY
5017, 177	5112, 835	99, 71503	C15	4998, 47	5114, 979	100, 4149	C15	5013, 017	5113, 149	100, 2215	C15	5017, 241	5112, 553	100, 1428	C16	5001, 385	5114, 692	100, 4654	L14		4988, 983	4976, 04	99, 97924	B1	4984, 697	4971, 997	100, 361	SBAY
5017, 626	5112, 879	99, 62059	C15	5000, 915	5114, 738	100, 4919	C15O	5017, 744	5112, 595	100, 0642	C15	5017, 362	5112, 623	99, 73069	C16	5005, 923	5114, 067	100, 3125	L14		4990, 767	4981, 886	99, 83774	B1	4985, 248	4972, 829	100, 1096	SBAY
4991, 67	5132, 612	99, 83251	C16	5001, 32	5114, 841	100, 3671	C15	5018, 032	5112, 697	99, 69627	C15	5017, 852	5112, 643	99, 62473	C16	5012, 592	5113, 179	100, 266	L14		4991, 211	4982, 284	100, 4895	B1	4985, 501	4973, 175	99, 94291	SBAY
4992, 846	5132, 399	100, 09	C16	5005, 7	5114, 116	100, 2877	C15	5018, 451	5112, 846	99, 60971	C15	4993, 071	5132, 501	99, 83417	C17	5016, 417	5112, 761	100, 1614	L14		4991, 562	4983, 732	100, 4583	B1	4986, 801	4975, 175	99, 85377	SBAY
4993, 18	5132, 404	100, 3824	C16	5012, 41	5113, 214	100, 2288	C15	4993, 085	5132, 555	99, 79293	C16	4993, 861	5132, 383	99, 99196	C17	5016, 567	5112, 786	99, 71198	L14		4989, 571	4985, 771	99, 75058	B1	4989, 242	4979, 382	99, 84692	SBAY
4995, 647	5132, 176	100, 3334	C16	5016, 886	5113, 003	100, 0993	C15	4993, 746	5132, 485	99, 89599	C16	4994, 397	5132, 369	100, 2104	C17	5017, 532	5112, 857	99, 62698	L14		4990, 187	4987, 868	100, 3503	B1	4990, 908	4982, 811	99, 78182	SBAY
4999, 489	5131, 787	100, 2843	C16	5017, 242	5113, 244	99, 57197	C15	4994, 438	5132, 328	100, 1723	C16	4994, 454	5132, 302	100, 4171	C17	4991, 643	5132, 637	99, 68379	L15		4987, 192	4988, 692	99, 68322	B1	4991, 144	4983, 283	100, 268	SBAY
5004, 31	5131, 269	100, 2165	C16	5017, 751	5113, 14	99, 58872	C15	4994, 593	5132, 3	100, 3713	C16	4996, 019	5132, 14	100, 4173	C17	4992, 61	5132, 565	99, 76113	L15		4987, 429	4988, 938	100, 1205	B1	4991, 602	4983, 716	100, 2694	SBAY
5007, 732	5130, 996	100, 0732	C16	4991, 425	5132, 697	99, 69847	C16	4996, 456	5132, 149	100, 3739	C16	4999, 833	5131, 697	100, 3109	C17	4993, 706	5132, 396	99, 90881	L15		4987, 974	4989, 295	100, 2575	B1	4989, 625	4985, 832	99, 76229	SBAY
5007, 86	5131, 123	99, 68795	C16	4992, 464	5132, 492	99, 88568	C16	5000, 223	5131, 698	100, 2864	C16	5004, 674	5131, 123	100, 2448	C17	4994, 211	5132, 42	100, 0052	L15		4989, 473	4991, 19	100, 3416	B1	4987, 515	4988, 777	99, 66781	SBAY
5008, 368	5131, 327	99, 66506	C16	4993, 246	5132, 371	100, 1107	C16	5005, 094	5131, 118	100, 206	C16	5007, 791	5130, 895	100, 1646	C17	4994, 626	5132, 436	100, 234	L15		5018, 606	4970, 263	99, 66368	B2	4987, 993	4989, 387	100, 1089	SBAY
4993, 004	5146, 313	99, 65557	C17	4993, 426	5132, 321	100, 3162	C16	5008, 261	5131, 109	100, 1807	C16	5008, 027	5131, 039	99, 78149	C17	4994, 736	5132, 428	100, 3574	L15		5018, 687	4970, 567	100, 0781	B2	4989, 496	4991, 215	100, 3249	SBAY
4993, 343	5146, 293	99, 69826	C17	4995, 676	5132, 179	100, 3285	C16	5008, 421	5131, 21	99, 72825	C16	5008, 523	5131, 024	99, 71142	C17	4995, 435	5132, 301	100, 4486	L15		5018, 55	4972, 749	100, 154	B2	5011, 386	4966, 426	99, 58678	NBAY
4993, 521	5146, 204	100, 0958	C17	4999, 518	5131, 78	100, 2986	C16	5008, 897	5131, 489	99, 69878	C16	4994, 9	5145, 67	99, 69987	L1	4995, 943	5132, 226	100, 3941	L15		5017, 097	4980, 747	100, 2265	B2	5011, 31	4966, 388	99, 58496	NBAY
4995, 858	5145, 265	100, 2783	C17	5004, 37	5131, 252	100, 218	C16	4995, 302	5145, 883	99, 71259	C17	4995, 405	5145, 45	100, 0915	L1	4999, 773	5131, 731	100, 3208	L15		5017, 12	4981, 224	99, 75212	B2	5011, 431	4967, 105	100, 1422	NBAY
4997, 257	5144, 857	100, 281	C17	5007, 658	5130, 984	100, 132	C16	4995, 585	5145, 666	99, 73075	C17	4995, 582	5145, 457	100, 2551	L1	5004, 595	5131, 187	100, 2309	L15		4991, 896	5028, 999	100, 3232	B3	5015, 276	4976, 22	100, 3447	NBAY
4999, 482	5144, 247	100, 3776	C17O	5007, 969	5130, 973	99, 75664	C16	4995, 783	5145, 649	100, 1476	C17	4996, 293	5145, 348	100, 2663	L1	5006, 463	5131, 112	100, 2455	L15		4992, 448	5030, 365	100, 2959	B3	5016, 907	4980, 588	100, 1525	NBAY
5001, 546	5143, 669	100, 1149	C17O	5008, 365	5131, 183	99, 67334	C16	4996, 642	5145, 33	100, 2566	C17	4997, 635	5144, 828	100, 3024	L1	5007, 065	5131, 133	100, 1067	L15		4992, 601	5030, 796	99, 71767	B3	5017, 064	4980, 81	99, 73052	NBAY
5001, 657	5143, 641	99, 88857	C17O	4993, 882	5146, 052	99, 69609	C17	4998, 114	5144, 878	100, 2769	C17	4999, 865	5144, 089	100, 384	L1	5007, 23	5131, 162	99, 8773	L15		4997, 671	5036, 776	99, 96559	B3	5018, 69	4970, 743	99, 55579	NBAY

5002, 247	5143, 725	99, 82578	C17O	4994, 522	5145, 644	99, 70761	C17	5000, 293	5144, 117	100, 3594	C17	5001, 986	5143, 637	100, 166	L1	5007, 989	5131, 227	99, 75254	L15		4999, 123	5039, 01	100, 2889	B3	5018, 535	4971, 465	100, 1041	NBAY
				4994, 679	5145, 604	100, 2446	C17	5002, 499	5143, 554	100, 132	C17	5002, 113	5143, 614	99, 95713	L1	4994, 368	5146, 227	99, 61673	L16		4997, 934	5039, 93	99, 80533	B3	5018, 641	4972, 757	100, 1506	NBAY
				4995, 88	5145, 225	100, 2439	C17	5002, 622	5143, 616	99, 94398	C17	5002, 661	5143, 578	99, 82697	L1	4995, 252	5145, 627	99, 77289	L16		5002, 841	5041, 544	100, 445	B3	5019, 835	4976, 294	100, 2939	NBAY
				4997, 314	5144, 822	100, 2783	C17	5003, 248	5143, 597	99, 83953	C17	4999, 049	5151, 361	100, 0825	L1A	4995, 929	5145, 416	99, 90514	L16		5001, 439	5041, 847	99, 98838	B3	5020, 83	4979	100, 2161	NBAY
				4999, 469	5144, 157	100, 3609	C17	5004, 381	5143, 173	99, 69075	C17	4999, 024	5150, 918	100, 1193	L1A	4996, 067	5145, 337	100, 2508	L16		5000, 823	5041, 923	99, 9236	B3	5020, 914	4979, 224	99, 20664	NBAY
				5001, 476	5143, 616	100, 1437	C17	5004, 983	5143, 187	99, 63163	C17	4999, 062	5150, 782	100, 2312	L1A	4996, 216	5145, 301	100, 241	L16		4999, 24	5042, 047	99, 77003	B3	5000, 605	5057, 922	100, 3749	EBAY
				5001, 654	5143, 615	99, 92436	C17	4999, 574	5152, 845	100, 031	L1	4999, 128	5149, 926	100, 2707	L1A	4997, 6	5144, 871	100, 2908	L16		5001, 596	5050, 924	99, 76721	B3	5000, 559	5057, 619	99, 79979	EBAY
				5002, 138	5143, 636	99, 84425	C17	4999, 478	5151, 534	100, 1192	L1	4999, 058	5146, 191	100, 3527	L1A	4999, 801	5144, 189	100, 402	L16		5001, 726	5051, 342	100, 3473	B3	5000, 905	5056, 279	99, 78344	EBAY
				4998, 488	5153, 27	100, 0488	L1	4999, 594	5150, 871	100, 2175	L1	4999, 105	5141, 579	100, 3189	L1A	5001, 317	5143, 917	100, 2402	L16		5002, 273	5052, 406	100, 4381	B3	5001, 611	5054, 556	99, 73594	EBAY
				4998, 451	5152, 127	100, 1665	L1	4999, 493	5146, 212	100, 3217	L1	4998, 958	5135, 824	100, 31	L1A	5001, 757	5143, 773	100, 1693	L16		4998, 783	5088, 477	100, 3461	B4	5002, 009	5052, 68	99, 79584	EBAY
				4998, 46	5151, 946	100, 2326	L1	4999, 526	5141, 58	100, 2713	L1	4998, 907	5128, 271	100, 3129	L1A	5001, 875	5143, 767	99, 86612	L16		4998, 607	5088, 975	99, 94806	B4	5002, 122	5052, 347	100, 3783	EBAY
				4998, 404	5150, 635	100, 2745	L1	4999, 378	5135, 859	100, 2813	L1	4998, 874	5122, 453	100, 3976	L1A	5002, 702	5143, 756	99, 7741	L16		4999, 019	5094, 994	99, 86663	B4	5002, 521	5051, 005	100, 3147	EBAY
				4998, 454	5145, 975	100, 3512	L1	4999, 313	5128, 311	100, 2705	L1	4998, 851	5115, 166	100, 4353	L1A	4998, 969	5151, 387	99, 78481	L17		4999, 593	5100, 365	99, 8625	B4	5002, 59	5050, 484	99, 75799	EBAY
				4998, 451	5141, 345	100, 3026	L1	4999, 24	5122, 548	100, 3667	L1	4998, 671	5106, 665	100, 5043	L1A	4998, 991	5150, 854	99, 93342	L17		4999, 585	5100, 678	100, 3797	B4	5003, 252	5048, 521	99, 86547	EBAY
				4998, 412	5135, 62	100, 3104	L1	4999, 274	5115, 204	100, 408	L1	4998, 659	5095, 108	100, 4322	L1A	4998, 922	5149, 999	100, 0199	L17		4993, 896	5104, 06	100, 0996	B4	5003, 767	5046, 572	100, 0624	EBAY
				4998, 383	5128, 054	100, 2749	L1	4999, 002	5106, 684	100, 4914	L1	4998, 459	5088, 532	100, 4303	L1A	4998, 949	5149, 567	100, 1546	L17		4993, 705	5104, 293	99, 56147	B4	5004, 46	5043, 296	100, 2467	EBAY
				4998, 349	5122, 305	100, 3785	L1	4998, 982	5095, 18	100, 414	L1	4998, 419	5075, 907	100, 4139	L1A	4998, 97	5149, 364	100, 2687	L17-C1		4995, 651	5104, 589	99, 85308	B4	5005, 927	5048, 953	100, 4146	EBAY
				4998, 359	5114, 949	100, 4259	L1	4998, 714	5088, 567	100, 4175	L1	4998, 28	5067, 076	100, 3553	L1A	4999, 025	5147, 916	100, 3435	L17-C1		4994, 204	5113, 267	99, 88928	B4	5005, 294	5048, 456	100, 2978	EBAY
				4998, 266	5106, 434	100, 5266	L1	4998, 681	5075, 965	100, 4012	L1	5000, 554	5058, 105	100, 4438	L1A	4998, 971	5146, 17	100, 3469	L17-C1		4995, 72	5113, 604	99, 73924	B4	5005, 173	5048, 23	99, 98789	EBAY
				4998, 185	5094, 999	100, 4363	L1	4998, 548	5067, 136	100, 3403	L1	5002, 075	5052, 561	100, 4683	L1A	4998, 956	5141, 604	100, 2971	L17-C1		4999, 198	5115, 086	100, 2685	B4	5004, 04	5046, 274	100, 155	EBAY
				4998, 064	5088, 311	100, 4105	L1	5000, 743	5058, 178	100, 4203	L1	5005, 834	5038, 498	100, 4466	L1A	4998, 902	5135, 797	100, 315	L17-C1		4996, 424	5120, 493	100, 2812	B4	5002, 586	5044, 081	99, 91959	EBAY
				4998, 042	5075, 752	100, 3918	L1	5002, 23	5052, 5	100, 4183	L1	5008, 424	5028, 384	100, 3744	L1A	4998, 878	5131, 815	100, 3387	L17-C1		4995, 827	5120, 3	99, 84649	B4	5001, 995	5043, 36	100, 2026	EBAY
				4997, 938	5066, 921	100, 3455	L1	5006	5038, 523	100, 4469	L1	4966, 399	4965, 238	100, 2337	B1	4998, 851	5128, 272	100, 3098	L17-C1		4994, 825	5121, 648	99, 77812	B4	5001, 391	5042, 862	99, 84055	EBAY
				5000, 295	5057, 953	100, 4209	L1	5008, 583	5028, 409	100, 367	L1	4972, 223	4970, 655	100, 1494	B1	4998, 797	5122, 469	100, 3842	L17-C1		4999, 919	4985, 751	101, 2647	BM	5000, 829	5041, 859	99, 83834	EBAY
				5001, 862	5052, 325	100, 4217	L1	4966, 369	4965, 253	100, 2209	B1	4972, 347	4970, 881	99, 6878	B1	4998, 789	5115, 154	100, 4275	L17-C1						4999, 097	5042, 017	99, 73514	EBAY
				5005, 699	5038, 314	100, 4192	L1	4972, 743	4971, 098	100, 1013	B1	4972, 568	4971, 397	99, 6952	B1	4998, 623	5106, 639	100, 4655	L17-C1						4999, 043	5039, 023	99, 82957	EBAY
				5008, 314	5028, 229	100, 3304	L1	4972, 765	4971, 197	99, 83884	B1	4986, 654	4987, 957	99, 69699	B1	4998, 731	5100, 01	100, 3343	L17-C1						4997, 772	5039, 836	99, 71735	EBAY
				4965, 583	4966, 454	99, 58034	B1	4986, 788	4988, 148	99, 64848	B1	4986, 895	4988, 258	99, 69138	B1	4998, 732	5099, 853	99, 91186	L17-C1						4997, 478	5036, 641	99, 83305	EBAY
				4965, 8	4966, 138	99, 61942	B1	4986, 934	4988, 305	100, 1832	B1	4986, 995	4988, 251	100, 1888	B1	4998, 737	5099, 029	99, 88648	L17-C1						4992, 231	5029, 887	99, 70817	EBAY
				4965, 788	4965, 922	100, 1624	B1	4987, 942	4989, 442	100, 2785	B1	4987, 813	4989, 4	100, 2798	B1	4998, 737	5098, 909	100, 2569	L17-C1						4992, 187	5029, 499	100, 2891	EBAY
				4966, 527	4964, 867	100, 2032	B1	4989, 459	4991, 324	100, 3448	B1	4989, 305	4991, 339	100, 3429	B1	4998, 69	5098, 615	99, 90412	L17-C1						4991, 788	5029, 011	99, 73726	EBAY
				4967, 188	4963, 998	100, 2146	B1	4971, 504	4969, 002	100, 225	B1	4967, 628	4962, 869	99, 84121	B11	4998, 621	5097, 71	99, 88824	L17-C1						4999, 96	4985, 805	101, 277	BM
				4967, 653	4963, 16	100, 0745	B1	4972, 842	4971, 11	100, 1166	B1	4967, 473	4963, 316	99, 92373	B11	4998, 603	5096, 635	99, 96933	L17-C1									

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DOI: https://doi.org/ 10.30564/jgr.v2i1.405

				4967,669	4962,964	99,88874	B1	4973,045	4971,194	99,82733	B1	4967,41	4963,448	100,1889	B11	4998,619	5095,535	100,0095	L17-C1								
				4967,774	4962,655	99,82617	B1	4973,224	4971,738	99,70921	B1	4966,97	4964,315	100,2424	B11	4998,614	5095,437	100,3588	L17-C1								
				4971,62	4968,834	100,2327	B1	4967,446	4962,649	99,78721	B0	4966,328	4965,221	100,2195	B11	4998,627	5095,11	100,3864	L17-C1								
				4973,415	4971,106	100,1269	B2	4967,545	4963,172	99,87753	B0	4965,794	4966,049	100,1745	B11	4998,526	5090,896	100,3837	L17-C1								
				4973,414	4971,332	99,76339	B2	4966,867	4964,438	100,2207	B0	4965,707	4966,158	99,58542	B11	4998,424	5088,608	100,4819	L17-C1								
				4973,494	4971,61	99,67461	B2	4966,262	4965,314	100,2128	B0	4965,434	4966,596	99,60233	B11	4998,385	5075,942	100,4001	L17-C1								
				4986,509	4987,811	99,65352	B3	4965,728	4966,181	100,1711	B0	4971,568	4968,984	100,2361	B2	4998,276	5067,058	100,3524	L17-C1								
				4986,56	4988,101	99,6589	B3	4965,698	4966,247	99,72655	B0	4972,797	4970,773	100,1713	B2	4999,335	5062,763	100,418	L17-C1								
				4986,663	4988,203	100,159	B3	4965,523	4966,642	99,61237	B0	4972,824	4971,029	99,79257	B2	5000,54	5058,105	100,4234	L17-C1								
				4987,965	4989,247	100,2935	B3	4985,308	4973,276	100,4125	B2	4986,515	4988,067	99,69955	B2	5001,365	5054,988	100,3659	L17-C1								
				4989,49	4991,134	100,3506	B3	4986,129	4976,104	100,1382	B2	4986,794	4988,22	99,70748	B2	5001,39	5054,811	99,87943	L17-C1								
				4985,554	4973,069	100,4376	B3-1	4986,336	4976,513	99,91905	B2	4986,98	4988,346	100,1771	B2	5001,635	5053,828	99,91275	L17-C1								
				4986,206	4976,101	100,139	B3-1	4988,757	4983,931	99,88793	B2	4987,839	4989,474	100,2874	B2	5001,726	5053,801	100,3366	L17-C1								
				4986,213	4976,351	99,9754	B3-1	4988,84	4983,986	100,305	B2	4989,365	4991,329	100,3492	B2	5001,803	5053,588	100,3978	L17-C1								
				4986,463	4976,604	99,90243	B3-1	4989,519	4985,976	100,3162	B2	4985,328	4973,277	100,4116	B3	5002,021	5052,495	100,4278	L17-C1								
				4988,277	4983,911	99,80186	B3-1	4990,186	4988,061	100,3518	B2	4985,324	4974,078	100,3376	B3	5002,439	5050,392	100,3879	L17-C1								
				4988,586	4984,316	99,91011	B3-1	4988,262	4973,062	100,4563	B3	4985,334	4974,283	100,1025	B3	5002,476	5049,992	100,349	L17-C1								
				4988,806	4984,482	100,3609	B3-1	4989,077	4975,857	100,2019	B3	4985,473	4974,865	100,1122	B3	5002,466	5049,911	100,1263	L17-C1								
				4989,54	4985,695	100,3649	B3-1	4989,937	4978,352	100,0872	B3	4985,62	4975,104	100,3419	B3	5002,493	5049,678	100,1237	L17-C1								
				4990,201	4987,862	100,3616	B3-1	4990,263	4979,614	100,0332	B3	4986,058	4975,653	100,2843	B3	5002,537	5049,309	100,229	L17-C1								
				4988,363	4972,799	100,4562	B4	4990,619	4980,956	100,2657	B3	4986,134	4976,078	99,96582	B3	5002,549	5049,088	100,433	L17-C1								
				4989,248	4976,172	100,1987	B4	4990,723	4981,374	100,4649	B3	4988,651	4984,014	99,80876	B3	5002,874	5045,691	100,3943	L17-C1								
				4989,909	4977,778	100,0724	B4	4991,103	4982,478	100,4255	B3	4988,909	4984,332	99,89648	B3	5002,987	5039,608	100,5553	L17-C1								
				4990,166	4979,243	100,0736	B4	4991,52	4983,938	100,4058	B3	4988,974	4984,277	100,2911	B3	5005,979	5016,927	100, 33	L17-C1								

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DOI: https://doi.org/ 10.30564/jgr.v2i1.405