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# Curriculum Vitae (CV) of Riyadh Manasrah

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## Curriculum Vitae (C.V.)



Name: Riyadh Saleh Manasrah

Date of birth: 15.12.1972

Place of birth (city & country): AL-Mafraq, Jordan

Nationality: Jordanian

Permanent address: Department of Physics, School of Science  
The University of Jordan  
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### Education

Secondary school degree 1990. Al-Mafraq secondary school for boys. Al-Mafraq, Jordan.

B.Sc. degree in physics in 1994. Yarmouk University-Physics department. Irbid, Jordan.

M.Sc. degree in physical oceanography 1998. Yarmouk University-Physics Department. Thesis title: "Circulation of the Jordanian waters of the Gulf of Aqaba, Red Sea". Irbid, Jordan.

Ph.D. degree in physical oceanography, July 2002. Rostock University. Thesis title: "The general circulation and water masses characteristics in the Gulf of Aqaba and northern Red Sea". Rostock, Germany.

### Employment history

**2023-present:** Head of Department of Physics, School of Science, the University of Jordan- Amman, Jordan.

**2023-present:** Full professor, Department of Physics, School of Science, the University of Jordan-Amman, Jordan.

**2020-2021:** President of the University of Jordan - Aqaba, Jordan.

**2019-2020:** President Assistant for Academic Affairs of the University of Jordan - Aqaba, Jordan.

**2019-2020:** Dean, School of Basic and Marine Sciences, the University of Jordan - Aqaba, Jordan.

**2018-2019:** Fulbright Visiting Scholars-Fellowship / Sabbatical leave – Mote Marine Laboratory, Sarasota, Florida-USA.

**2017-2018:** President Assistant of the University of Jordan - Aqaba, Jordan

**2017-2018:** Director of the Marine Science Station-Aqaba, Jordan

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**2016-present:** Full professor of physical oceanography at Coastal Environment Department, School of Basic and Marine Sciences, the University of Jordan/Aqaba.

**2014-2016:** Head of Coastal Environment Department, School of Basic and Marine Sciences, the University of Jordan – Aqaba, Jordan

**2011-2013:** Director of the Marine Science Station-Aqaba, Jordan

**2010-2011:** Associate professor Visitor (Sabbatical) at Department of Civil and Environmental Engineering, Stanford University, USA

**2009-2010:** Director of the Marine Science Station-Aqaba, Jordan

**2009-present:** Lecturer at the School of Basic and Marine Sciences, the University of Jordan - Aqaba, Jordan

**2008-2016:** Associate professor (Physical oceanography) at the Marine Science Station and the School of Basic and Marine Sciences, the University of Jordan - Aqaba, Jordan

**2002-2008:** Assistant professor researcher (Physical oceanography) at the Marine Science Station-Aqaba, Jordan.

**1999-2002:** Ph.D, candidate student in physical oceanography at Rostock University, Rostock, Germany.

**1996-1997:** Working as teacher assistance in Yarmouk University, Irbid, Jordan.

**1994-1998:** M.Sc. student in physics at Yarmouk University, Irbid, Jordan.

**1990-1994:** B.Sc. student in physics at Yarmouk University, Irbid, Jordan.

## **Research interests**

### **(i) Main field**

Physical oceanography

### **(ii) Interests**

- 1- Deep and coastal water circulation.
- 2- Waves, tides and shallow-water physical processes
- 3- Air-sea interaction and the annual variation of the heat flux and heat storage.
- 4- Water masses characteristics.
- 5- Observation of physical properties of marine coastal ecosystem.

## **Professional skills**

- Expert in operating, recovering and analyzing of the Acoustic Doppler Current Profiler (ADCP) and other types of current meter.

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- Expert in operating, recovering and analyzing of the Conductivity, Temperature and Depth meter (CTDs).
- Excellent in using Microsoft Office, graphics, statistics and mathematics software (Excel-WinWord-PowerPoint, Matlab, Grapher, Minitab, Paint Shop pro, Statview, Photoshop, Surfer, AutoCAD).
- Excellent in writing and preparing scientific research proposals with collaboration with local, regional and international institutions.
- Very good experience in administrations duties and supervising.

### **Research activities, projects and consultations**

- 1996-2020: Monitoring of the Marine Environment in front of the Industrial Complex. Funded by Industrial Complex in Aqaba.
- 2001-2020: Monitoring of the environmental quality of the Jordanian coast of the Gulf of Aqaba, National Monitoring Program. Funded by Aqaba Special Economic Zone Authority (ASEZA).
- 2003: Bathymetry survey in front of Hotel area in the northern tip of the Gulf of Aqaba.
- 2003-2004: Alya lagoon project in the northern Gulf of Aqaba: EIA of physical oceanography study.
- 2003-2008: El-Nino (ENSO) and past climate variability recorded in corals from the northern Gulf of Aqaba, Jordan. Funded by International Atomic Energy Agency (IAEA).
- 2004-2006: The Red Sea Marine Peace Park (RSMPP); Fast Track Project. Collaboration with ASEZA Funded by USAID.
- 2004-2007: Environmental assimilative capacity of coastal habitats and green mariculture of high revenue low environmental burden species on the Jordanian sector of the Gulf of Aqaba. Funded by the Higher Council For Science and Technology.
- 2005: Red-Dead Sea conduit project: Preliminarily EIA of physical oceanography study.
- 2005-2006: Monitoring program on water characteristics and circulation in the Tala bay artificial lagoon in the northern Gulf of Aqaba.
- 2006: Geophysical survey in the northern tip of the Gulf of Aqaba for Alya Oasis project.

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- 2007-2010: Real time surface current measurements to protect the Gulf of Aqaba against man-induced or accidental oil and other toxic spills. Funded project by North Atlantic Treaty Organization (NATO).
- 2007-2009: Protection of Gulf of Aqaba against anthropogenic stress during climate changes. Funded project by North Atlantic Treaty Organization (NATO).
- 2007-2009: Monitoring natural and anthropogenic aerosol pollution and its impact on ecosystems in the Gulf of Aqaba. Funded project by North Atlantic Treaty Organization (NATO).
- 2006-2009: Artificial Reefs for environmental management in the Gulf of Aqaba. Funded project by MERC-USAID.
- 2010-2011: Red Sea – Dead Sea water conveyance EIA study. Funded by World Bank.
- 2012-present: Water Quality Monitoring program for Ayla Oasis lagoons. Funded by Ayla Oasis Project.
- 2012-2015: Managing the Environmental Sustainability of Ports for a durable development (MESP). Funded project by ENPI-CBCMED (EU).
- 2013-2015: Inclusive governance for sustainable Mediterranean coastal metropolis – MEDSEATIES. Funded project by ENPI-CBCMED (EU).
- 2013-2016: Risk assessment analysis on offshore platforms in Mediterranean (RAOP-MED). Funded project by ENPI-CBCMED (EU).
- 2017-2019: Physical mechanisms which control water budget and sea level in the Dead Sea. Institutional Links Grant Agreement No.: 277680624 (STREAM). Funded by British Council.
- 2020-2022: BEst Rapid Environmental Assessment Decision sYstem (BE-READY). Funded project by European Commission-Union Civil Protection Mechanism (UCPM).
- 2023-2025: Preparedness for Operational Monitoring and Prediction of contaminant Transport in the Sea (PROMPT). Funded project by European Commission-Union Civil Protection Mechanism (UCPM).

### **Honors, Awards, Fellowships, Membership of Professional Societies**

- 2003-2011: Junior associate membership in Abdus salm International Center for Theoretical Physics (ICTP), Trieste - Italy.
- 2018-2019: Fulbright Visiting Scholars-Fellowship / Sabbatical leave – Mote Marine Laboratory, Sarasota, Florida-USA

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### **Conferences, courses, symposiums and meetings**

The general assembly of the Red Sea program in Bremen- Germany. March 1998. Participation: Poster.

Course on the Mediterranean sea(s) circulation & ecosystem functioning. abdu salam international center for theoretical physics, November 2<sup>nd</sup>-20<sup>th</sup> 1998 Trieste-Italy.

Course on climate variability studies in the ocean "Tracing and modeling the ocean variability". abdu salam international center for theoretical physics, June 16<sup>th</sup>-27<sup>th</sup> June 2003 Trieste-Italy. Participation: Poster.

XVIth Rencontres de Blois "Challenges in the climate sciences" Château de Blois, May 23 to May 28, 2004. Participation: Poster.

Meeting: Future collaboration between Stanford University and the Marine Science Station in physical oceanography studies in the Gulf of Aqaba, November 29<sup>th</sup>-30<sup>th</sup>, 2004 Stanford-USA.

Scientific visit at Abdus salam International Center for Theoretical physics (ICTP), June 21<sup>st</sup>-August 5<sup>th</sup>, 2006 Trieste-Italy.

The Regional Training Workshop on "Vulnerability Assessment and Adaptations to Climate Change Impacts in Coastal Areas" 8-10 November 2008, Jeddah, KSA.

Scientific visit at Abdus salam International Center for Theoretical physics (ICTP), June 25<sup>th</sup>-July 25<sup>th</sup>, 2009 Trieste-Italy.

The 9th International Radiowave Oceanography Workshop (ROW-9), 19-22 May 2009, Split Croatia.

Spring Training Course on software operation, field setup, calibration, diagnosis and repair of HF radar systems. CODAR Ocean Sensors, Ltd, Mountain View, California, April 27-May 1, 2009.

The Regional Training Workshop on "Application of DIVA and CVI in Assessing Coastal Vulnerability to Climate Change Impacts in the Red Sea and Gulf of Aden" 25-27 January 2010, Jeddah, KSA.

The 2<sup>nd</sup> Regional Meeting of Marine Research Centers, 13 -14 March 2012, Jeddah, KSA.

International Conference on "Land-Sea Interactions in the Coastal Zone" Jounieh-Lebanon, November 06 - 08, 2012.

Kick Off Meeting of Managing the Environmental Sustainability of Ports for a durable development (MESP), Genoa, Italy - July 17-19, 2012.

The second meeting of the Managing the Environmental Sustainability of Ports for a durable development (MESP), Patras, Greece - April 22-23, 2013.

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The third meeting of the Managing the Environmental Sustainability of Ports for a durable development (MESP), La Spezia, Italy - December 10-12, 2013.

Kick Off Meeting of Inclusive governance for sustainable Mediterranean coastal metropolis – MEDSEATIES. Funded project by ENPI-CBCMED (EU), Marseille, France, January 20-21, 2014.

Kick Off Meeting of Risk assessment analysis on offshore platforms in Mediterranean (RAOP-MED). Funded project by ENPI-CBCMED (EU), Lemesos, Cyprus, February 19-20, 2014.

The second meeting of Inclusive governance for sustainable Mediterranean coastal metropolis – MEDSEATIES. Funded project by ENPI-CBCMED (EU), Genoa, Italy, September 23-25, 2014.

Aqaba International Conference on Marine and Coastal Environment, "Status and Challenges in the Arab World", Aqaba, Jordan,, October 27-29, 2014.

Training seminar on technical and financial management of the by ENPI-CBCMED (EU), Beirut, Lebanon, December 16-17, 2014.

The Second Red Sea Book Workshop, Jeddah, KSA, 14-18/2/2016. Chapter title "Circulation and physical properties of seawater in the Gulf of Aqaba, Red Sea"

International Conference on Sciences, Technology and Social Sciences, Dubai, UAE, 13-14 February, 2017. Article title "Physical and Chemical properties of seawater during 2013-2015 in the 400m water column in the northern Gulf of Aqaba, Red Sea".

Thirteenth Medcoast congress on coastal and marine sciences, engineering, management & conservation (MEDCOAST 17). Malta, 31 October-4 November 2017.

Final meeting of Physical mechanisms which control water budget and sea level in the Dead Sea. Institutional Links Grant Agreement No.: 277680624 (STREAM). Funded by British Council. Plymouth, UK, 2-7 December 2018.

Fulbright visiting scholar enrichment seminar. American Security: Economic and Food Solutions. Minneapolis, MN, USA 25-27 April 2019.

Final meeting of project "BEst Rapid Environmental Assessment Decision sYstem (BE-READY)". Funded project by European Commission-Union Civil Protection Mechanism (UCPM).

Kick-off meeting of project "Preparedness for Operational Monitoring and Prediction of contaminant Transport in the Sea (PROMPT) during 29-30 May 2023, Genoa-Italy. Funded by project by European Commission-Union Civil Protection Mechanism (UCPM).

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First technical meeting of project “Preparedness for Operational Monitoring and Prediction of contaminant Transport in the Sea (PROMPT) during 17-19 May 2023, Santander-Spain. Funded by project by European Commission-Union Civil Protection Mechanism (UCPM).

### Publications

- Rasheed M., Al-Rousan S., **Manasrah R.** (2022). Estimation of the total inorganic phosphate-phosphorus in sediments of the old Phosphate Port at Jordan’s Gulf of Aqaba. *Jordan Journal of Chemistry (JJC)*, 17(2), 103-109
- Manasrah R.**, Alsaad L., Trabeen K., Rasheed M., Al-Absi E., L. Dixon L.K, Al-Sawalmih A. (2020) Physical and Chemical properties of seawater during 2013-2015 in the 400 m water column in the northern Gulf of Aqaba, Red Sea. *Environmental Monitoring and Assessment*, 192(188), 1-16. doi.org/10.1007/s10661-020-8134-4.
- Khalaf M., Al-Horani F., **Manasrah R.**, Arabeyyat Z. (2020) development of fish communities in artificial lagoons in the Gulf of Aqaba, Red Sea. *Fresenius Environmental Bulletin*, 29(6), 4488-4496.
- Manasrah R.**, Nazzal F., Al-Sawalmih A. (2019) Comparison of hydrological and physical properties between the manmade Saraya lagoon and the northern Gulf of Aqaba. *Fresenius Environmental Bulletin*, 28(7), 5539-5548.
- Al-Absi E., **Manasrah R.**, Abukashabeh A., Wahsha M. (2019) Assessment of heavy metal pollutants at various sites along the Jordanian coastline of the Gulf of Aqaba, Red Sea. *International Journal of Environmental Analytical Chemistry*, 99(8), 726-740. DOI: 10.1080/03067319.2019.1609459.
- Manasrah R.**, Al-Majali T. (2019) Physical Properties and Exchange System of Seawater in Royal Yacht Club Marina in the Northernmost Gulf of Aqaba. *Natural Science*, 11(04), 106-121. DOI: 10.4236/ns.2019.114012
- Manasrah R.**, Al-Badaineh M., Rasheed M., Dixon L.K. (2019) Temperature dispersion of cooling water discharge into oligotrophic seawater. *Fresenius Environmental Bulletin*, 28(5), 4380-4391.
- Al-Absi E., Alameer S., **Manasrah R.** (2019) Critical remarks on radioactivity analysis in drinking waters: high doses and increased lifetime risks from Aqaba tap water, Jordan. *Desalination and water treatment*, 146,107-119. DOI: 10.5004/dwt.2019.23604



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- Manasrah R.**, Abu-Hilal A., Rasheed M. (2019) Physical and Chemical Properties of Seawater in the Gulf of Aqaba and Red Sea. In: Rasul N., Stewart I. (eds) *Oceanographic and Biological Aspects of the Red Sea*. Springer Oceanography. Springer, Cham.
- Al-Absi E., Abukashabeh A., **Manasrah R.**, Al-Momani R., Okoor S., Wahsha M. (2018) Determination of selected element concentrations in drinking water from Aqaba city, Jordan. *Fresenius Environmental Bulletin*, 27 (11), 7199-7208.
- Rasheed M., **Manasrah R.**, Al-Trabeen K., Dixon L.K. (2018) Impact of artificial lagoons on seawater quality: evidence from 7 years of physicochemical seawater monitoring. *Environmental Monitoring and Assessment*, 190(4), DOI: 10.1007/s10661-018-6620-8.
- Khalaf M.A., Ma'ayta S.S, Wahsha M.A., **Manasrah R.S.** and Al-Najjar T.A. (2019) Community structure of the deep sea fishes in the northern Gulf of Aqaba, Red Sea (Osteichthyes and Chondrichthyes), *Zoology in the Middle East*, 65(1), 40-50 DOI:10.1080/09397140.2018.1552347.
- Wahsha M., Al-Absi E., **Manasrah R.**, Al-Zyoud W. and Bini C. (2017) The impact of uranium near a phosphate mining port on the environment (Gulf of Aqaba, Jordan). *EQA-International Journal of Environmental Quality*, 22, 25-32
- Schenone C., Brunenghi M, Pittaluga I., Hajar A., Kamali W., Montaresi F., Rasheed M., Abdul Wahab A., El Moghrabi Y., **Manasrah R.**, Merhaby D. and Montani L. (2017) Managing European Cross Border Cooperation Projects on Sustainability: A Focus on MESP Project. *Sustainability*, 9(1). doi:10.3390/su9010112.
- Al-Absi E., **Manasrah R.**, Wahsha M. and Al-Makahleh M. (2016) Radionuclides levels in marine sediment and seagrass in the northern Gulf of Aqaba, Red Sea, *Fresenius Environmental Bulletin*, 25(9), 3461-3474.
- Manasrah R.** (2015) Water exchange calculations using the salt conservation law in Ayla lagoons in the northern Gulf of Aqaba, Red Sea. *Natural Science*, 7, 197-209.  
<http://dx.doi.org/10.4236/ns.2015.74023>.
- Manasrah R.** (2015) Physical properties and exchange system of seawater in Ayla lagoons in the northern Gulf of Aqaba, Red Sea. *Fresenius Environmental Bulletin*, 24(4), 1232 - 1249.
- Manasrah R.** (2013) Tide variation and signals during 2000-2004 in the northern Gulf of Aqaba, Red Sea. *Natural Science*. 5(2), 1264-1271, [dx.doi.org/10.4236/ns.2013.512154](http://dx.doi.org/10.4236/ns.2013.512154)
- Naumann M.S., Richter C., Mott C., El-Zibdah M., **Manasrah R.** and Wild C. (2012) Budget of coral-derived organic carbon in a fringing coral reef of the Gulf of Aqaba, Red Sea. *Journal of Marine Systems*, 105(108), 20–29. [dx.doi.org/10.1016/j.jmarsys.2012.05.007](http://dx.doi.org/10.1016/j.jmarsys.2012.05.007).



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- Niggli W., Naumann M.S., Struck U., **Manasrah R.** and Wild C. (2010) Organic matter release by the benthic upside-down jellyfish *Cassiopea* sp. fuels pelagic food webs in coral reefs. *Journal of Experimental Marine Biology and Ecology*, 384, 99-106.
- Manasrah R.**, Hasanean H.M. and Al-Rousan S. (2009) Spatial and Seasonal Variations of Sea Level in the Red Sea, 1958-2001. *Ocean Science Journal*, 44, 145-159.  
[doi.org/10.1007/s12601-009-0013-4](https://doi.org/10.1007/s12601-009-0013-4).
- Manasrah R.** and Badran M.I. (2008) Inter-annual variation in the seawater thermohaline structure in the northern Gulf of Aqaba, Red Sea. *Dirasat Pure Sciences*, 35(92), 123-135.
- Al-Zibdah M., **Manasrah R.**, Oqaily F. and Al-Najjar T. (2008) Neighboring Cage Fish Farming Affecting Water and Seabed Quality of the Jordanian Northern Gulf of Aqaba, Red Sea. *Ocean Science Journal*, 43(1), 9-16.
- Al-Najjar T., Fawaz J.B., **Manasrah R.**, Al-Zibdah M. and Abu-Hilal A. (2008) Variations of Heavy Metals Concentration in Suspended Matter and Physiochemical Properties in the Coastal Surface Water of the Gulf of Aqaba, *Jordan Journal of Biological Sciences*, 1(4), 153-158.
- Mayer F., Naumann M., Haas A., **Manasrah R.** and Wild C. (2007) Investigation of short-linked nutrient cycles via coral mucus in the Red Sea. *Interact Symposium*, 7 December 2007, Munich, Germany.
- Manasrah R.**, Zibdah M., Al-Ougaily F., Yusuf N. and Al-Najjar T. (2007) Seasonal changes of water properties and current in the northernmost Gulf of Aqaba, Red Sea. *Ocean Science Journal*, 42(2), 113-116.
- Cornils A., Schnack-Schiel S.B., Al-Najjar T., Badran M.I., Rasheed M., **Manasreh R.** and Richter C. (2007) The seasonal cycle of the epipelagic mesozooplankton in the northern Gulf of Aqaba (Red Sea). *Journal of Marine Systems*, 68, 278–292.
- Al-Rousan S., Felis T., **Manasrah R.** and Al-Horani F. (2007) Seasonal variations in the stable oxygen isotopic composition in *Porites* corals from the northern Gulf of Aqaba, Red Sea. *Geochemical Journal*, 41(5), 333-340.
- Rasheed M., Al-Rousan S., **Manasrah R.** and Al-Horani F. (2006) Nutrient Fluxes from Deep Sediment Support Nutrient Budget in the Oligotrophic Waters of the Gulf of Aqaba, *Journal of Oceanography*, 62(1), 83-89.
- Manasrah R.**, Rasheed M. and Badran M. (2006) Relationships between water temperature, nutrients and dissolved oxygen in the northern Gulf of Aqaba, Red Sea. *Oceanologia*, 48(2), 237-253.
- Manasrah R.**, Lass U. and Fennel W. (2006) Circulation in the Gulf of Aqaba (Red Sea) during winter-spring. *Journal of Oceanography*, 62(2), 219-225.

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- Manasrah R.**, Al-Horani F., Rasheed M., Al-Rousan S. and Khalaf M. (2006) Patterns of summer vertical and horizontal currents in coastal waters of the northern Gulf of Aqaba, Red Sea. *Estuarine, Coastal and Shelf Science*, 69, 567-579. doi:10.1016/j.ecss.2006.05.024, 69, 567-579.
- Manasrah R.** (2006) Physical oceanography study in the coastal waters of the Jordanian sector of the northern tip of the Gulf of Aqaba (Hotels Area) during summer 2003. *Mu'tah Lil-Buhuth wad-Dirasat*, 21(1), 81-98.
- Khalaf M., Al-Horani F., Al-Rousan S. and **Manasrah R.** (2006) Community structure of the family Pomacentridae along the Jordanian coast, Gulf of Aqaba, Red Sea. *Zoology in the Middle East*, 37, 47-62.
- Badran M., **Manasrah R.** and Rasheed M. (2006) Sea-water seasonal changes at a heavy tourism investment site on the Jordanian northern coast of the Gulf of Aqaba, Red Sea. *Chemistry and Ecology*, 22, 425 – 435. doi: 10.1080/02757540600917344.
- Al-Rousan S., Rasheed M., Al-Horani F. and **Manasrah R.** (2006) Geochemical and textural properties of carbonate and terrigenous sediments along the Jordanian coast of the Gulf of Aqaba, *Journal of Oceanography*, 62(6), 839-849.
- Khalaf M., Al-Horani F., **Manasrah R.** and Al-Rousan S. (2005) Community structure of the family labridae along the Jordanian coast, Gulf of Aqaba, Red Sea. *Lebanese Science Journal*, 6(2), 11-26.
- Badran M., Rasheed M., **Manasrah R.**, Al Najjar T. (2005) Nutrient flux, fuel of the summer primary productivity in the oligotrophic waters of the Gulf of Aqaba, Red Sea. *Oceanologia*, 47(1), 47-60.
- Al-Horani F.A., Al-Rousan S.A., **Manasrah R.**S and Rasheed M.Y. (2005) Coral calcification: Use of radioactive isotopes and metabolic inhibitors to study the interactions with photosynthesis and respiration. *Chemistry and Ecology*, 21(5), 325-335.
- Shatanawi M., Al-houri Z., Freissinet C., Mensencal Y., Badran M. and **Manasrah R.** (2004) Tidal Force and Wind Effect on the Hydrodynamics of the Gulf of Aqaba Using TELEMAC-2D. Presented at the INCO-MED Conference, Amman, June 14.
- Manasrah R.**, Badran M., Lass U. and Fennel W. (2004) Circulation and winter deep-water formation in the northern Red Sea. *Oceanologia*, 46(1), 5-23.
- Manasrah R.** (2002) The general circulation and water masses characteristics in the Gulf of Aqaba and northern Red Sea. *Meereswissenschaftliche Berichte (Marine Science Report)*. 50, 1-120.

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Badran M.I., Al Tarabien K., Rasheed M., Al Najjar T., **Manasrah R.** and Haese C. (2001) Evidence from long term records on high summer new primary production in the oligotrophic waters of the Gulf of Aqaba, Red Sea. Aquatic Sciences Meeting. American Society for Limnology and Oceanography, Albuquerque, NM, USA.

Richter C., Badran M.I., Voigt A.E. and **Manasrah R.S.** (2000) Advection and consumption of zooplankton in a Red Sea coral reef. 9<sup>th</sup> Int. Coral Reef Symposium., Bali, Indonesia (Abstract).

**Manasrah R.S.** (1998). Circulation of the Jordanian waters of the Gulf of Aqaba, Red Sea. M.Sc. Thesis, Yarmouk University, Irbid, Jordan.

### Teaching courses for graduate and undergraduate

- General physics
- Alternative energy resources
- Introduction to physical oceanography
- Advances physical oceanography
- Ocean circulation
- Air-sea interaction dynamics