

ER Sheet Data Entry Form

Basic Data

Officer ID No. Details

Service	CSS	Cadre		Sub Cadre		Id No.	will be alerted by CS Division, LNB
						1162	

Select List Year (Allot Year)

Name Details

Title	First Name	Middle Name	Sur Name	Initials
Dr	Manohar		Arora	
CSL No./ SCSL No: (if known)				
Sex	<input checked="" type="radio"/> Male <input type="radio"/> Female	Date of Birth	Aug 19, 1963	Date of Retirement
				Aug 31, 2023
Community		General	Religion	Hindu
Father's Name		G R Arora		

Birth Details

Birth Place	Palwal	Birth State/UT	Haryana	Nationality	Indian
Birth District	Faridabad	Mother Tongue	Punjabi		
Domicile	Uttarakhand	Physically Handicap Status	Hearing Impaired		
Blood Group	B +ve	Identification Marks	Black mole on chin.		

Marital Details

Marital Status	Married	Spouse Name	Vasundhara
Spouse Nationality	Indian		

Joining Details

Source of Recruitment		Joining Date	Mar 24, 1987	Retirement Details	August 2023
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Departmental Examination Details

	Level	Year	Rank
1			
2			
3			

Remarks (if any)							
Language Known							
		Read		Write		Speak	
Indian Languages Known	1	Hindi	Fluent	Fluent	Fluent		
	2	Punjabi	No	No	Fluent		
	3						
	4						
	5						
Foreign Lang. Known	1						
	2						
	3						
Address Details							
Permanant Address		306 Solanipuram		City	Roorkee		
		State/UT	Uttarakhand	Pin Code	247,667		
Present Contact Address		306 Solanipuram		City	Roorkee		
		State/UT	Uttarakhand	Pin Code	247,667		
		Phone (Off)	249,234	Fax.	272,123		
		Phone(Res)	279,263	Mob No	9,760,315,885		
		E-Mail (Mandatory)	arora@nih.ernet.in				

Qualification (Use extra photocopy sheets for multi qualifications, experience, training, awards details)				
Qualification		Discipline		Specialization 1
Ph D		Hydrology		Snow and Glacier Hydrology
Year	Division	CGPA		Specialization 2
2,005				
Institution		University	Place	Country
IIT			Roorkee	India
Experience				
Type of Posting			Level	
CADRE			Other	
Designation			Present Position	
SCIENTIST D			Regular	
Ministry			Department	
Ministry of Water Resources, River Development and			National Institute of Hydrology	
Office			Place	
National Institute of Hydrology			Roorkee	
Experience Subject			Period of Posting	
Major		Minor	From	To
Surface Water Hydrology		Snow & Glacier Hydrology	Jun 12, 2000	Jun 19, 2015
Note:-Refer the Annexure to fill above Major, Minor Subjects and below given training subject				
Training				
Training Year	Training Name		Training Subject	
Level	Institute Name, Place		Field Visit Country	Field Visit Place (within India)
Sponsoring Authority	Period of Training		Duration	Result
	From	To	(in Weeks)	<input type="radio"/> Qualified
				<input type="radio"/> Not Qualified
Awards/Publications				
Type of Activity :		<input checked="" type="checkbox"/> Academic	<input type="checkbox"/> Non Academic	
Activity Area		Activity Subject	Activity Title	
		LIST OF PUBLICATIONS ATTACHED		
Day	Month	Year	Activity Description/Remarks	Level

Note: (i) Concerned CSS officer is responsible for the correctness of information sent through ER Sheet proforma.

(ii) Subject to verification by the concerned administrative authorities.

Date : _____ Place : _____
Information checked and verified - by _____

Signature of Officer _____

Section Officer		Ministry/Department	
E-mail Id		Room No.	Building Name :
Phone No.		Wing No.	

Details of deputation (if applicable)

Name of office	Post held at that time in parent office	Name of post (selected for deputation)	Period of deputation

Details of Foreign visit

Sl No	Place of Visit	Date of Visit	Post held at that time	Whether it is personal or official visit	Details of visit
1.	Oxford, UK	6 th -9 th July 2005	Scientist B	official	To attend workshop
2.	Austria	27 th - 31 st August 2007	Scientist B	Official	To attend workshop
3.	Nepal	11 th - 13 th February 2009	Scientist B	Official	To attend workshop
4.	Japan	10 th - 16 th March 2011	Scientist C	Official	To attend meeting
5.	Turkey	25 th - 27 th July 2011	Scientist C	Official	To attend Workshop
6.	South Korea	6 th - 8 th October 2011	Scientist C	Official	To attend meeting
7.	Japan	29 th September to 02 October 2012	Scientist C	Official	To attend meeting
8.	Switzerland	24 th March - 2 nd April 2015	Scientist D	Official	To attend conference

Transfer/posting details

Place	Period of posting	
	Since	From
Patna	1996	1991

International Journals (Published):

1. Pratap Singh, Naresh Kumar and **Manohar Arora** (2000) Degree-day factors for snow and ice for Dokriani Glacier, Garhwal Himalayas. *Journal of Hydrology*, Vol 235, pp. 1-11.
2. Pratap Singh, K.S. Ramasastri, Naresh Kumar and **Manohar Arora** (2000) Correlations between discharge and meteorological parameters and runoff forecasting from a highly glacierized Himalayan basin. *Hydrological Sciences Journal*, Vol. 45, pp. 637-652.
3. **Manohar Arora**, N.K.Goel and Pratap Singh (2005) Evaluation of temperature trends over India. *Hydrological Sciences Journal*. Volume 50(1), pp 81-93.
4. **Manohar Arora**, N.K. Goel, Pratap Singh and R.D. Singh (2005) Regional Flow Duration Curve for a Himalayan River Chenab, *Nordic Hydrology*. Vol 36 No 2 pp 193-206.
5. Pratap Singh, **Manohar Arora** and N.K.Goel (2006) Effect of climate change on runoff of a glacierized Himalayan basin. *Hydrological Processes*. 20, 1979-1992 (2006).
6. **Manohar Arora**, Pratap Singh, N.K.Goel and R.D.Singh (2006) Spatial distribution and seasonal variability in a mountainous basin in the Himalayan region. *Water Resources Management* (2006) 20: 489-508.
7. Pratap Singh, Vijay Kumar, T Thomas and **Manohar Arora** (2008) Changes in rainfall and relative humidity in river basins in northwest and central India. *Hydrological Process*. 22, 2982 – 2992 (2008).
8. **Manohar Arora**, Pratap Singh, N.K.Goel and R.D.Singh (2008) Climate variability influences on hydrological responses of a large Himalayan basin. *Water Resources Management*. 22, 1461-1475.
9. Pratap Singh, Vijay Kumar, T. Thomas and **Manohar Arora** (2008) Basin – wise assessment of temperature variability and trends in the northwest and central India. *Hydrological Sciences Journal*. 53(2), 421 - 433.
10. **Manohar Arora**, D S Rathore, R.D. Singh, Rakesh Kumar and Amit Kumar (2010). Estimation of Melt Contribution to Total Streamflow in River Bhagirathi and River DhaultiGanga at Loharinag Pala and Tapovan Vishnugad Project Sites. *Journal of Water Resource and Protection*, Vol 2, Number 7, 636-643.

11. Narayan P Gautam, **Manohar Arora**, N.K.Goel and A R S Kumar (2012) Investigating the Impact of Climate Change on Future Runoff of River Satluj. *Journal of Hydrology and Meteorology*, Vol.8, No.1, 10- 21.
12. **Manohar Arora**, Rakesh Kumar, Naresh Kumar and Jatin Malhotra (2013) Assessment of Suspended Sediment Concentration and Load from a Large Himalayan Glacier. *Hydrology Research*, 45.2, 2014, 292-306.
13. **Manohar Arora**, Rakesh Kumar, R D Singh, Jatin Malhotra and Naresh Kumar (2014) *Hydrological Sciences Journal*, DOI 10.1080/02626667.2014.951362. Online: 08 August 2014.
14. **Manohar Arora**, Rakesh Kumar, Jatin Malhotra and Naresh Kumar (2014) Correlation of Streamflow and Climatic Variables for a large Glacierized basin. *Journal of Water Resource and Protection*, 2014, 6, 1326-1334. Published Online October 2014.
15. Narayan P Gautam and **Manohar Arora** (2015) Study of Climate Change using GCM Downscaling: Special Reference to Indian Sub Continent. *HYDRO NEPAL*, Issue No 16, January 2015, 36-39.
16. Allen, S.K., Rastner, P., **Arora, M.**, Huggel, C. and Stoffel M. Lake outburst and debris flow disaster at Kedarnath, June 2013: Hydrometeorological triggering, and topographic predisposition. *Landslides Journal*, DOI 10.1007/s10346-015-0584-3 May 2015.
17. Narayan Gautam, **Manohar Arora** and N K Goel (2014) Prediction of Precipitation for considering Climate Change and GCM Outputs: Satluj River. *Ecopersia*, Vol 2, issue 4, Autumn 2014, 757-765.

International Journal (Accepted):

1. **Manohar Arora**, Rakesh Kumar, Jatin Malhotra and Naresh Kumar (2014) Meltwater Characteristics of Gangotri Glacier. *Arctic, Antarctic and Alpine Research*.

International Conferences (Published):

- 1 **Manohar Arora**, Pratap Singh and N.K.Goel (2003) Evaluation of climate change impact on rainfall, discharge and temperature for a Himalayan basin. *International Conference on Water and Environment*, 15-18 Dec. 2003, Bhopal.
- 2 **Manohar Arora**, Pratap Singh, N.K.Goel and R.D.Singh (2005) Effect of climate change on flow regime of a glacierized Himalayan basin. *International*

Conference on Hydrological Perspectives for Sustainable Development. 23-25 Dec 2005. Roorkee.

- 3 **Manohar Arora** (2005) Isotope hydrology in India with reference to arid zone. Oxford workshop on Isotopic and Chemical tracers. July 6th – 9th 2005. Oxford University, Christ Church. London.
- 4 **Manohar Arora**, R D Singh and Pratap Singh (2006) Flood Frequency Analysis of Himalayan River Brahmaputra. Dec 5th – Dec 8th 2006. International Conference on Hydrology and Watershed Management, JNTU Hyderabad.
- 5 **Manohar Arora** and R.D.Singh (2007) Modelling of melt dominated streamflow – a case study for a large Himalayan basin. August 27th – August 31st 2007. Workshop on Glaciers in Watershed and Global Hydrology, Obergurgl, Austria.
- 6 **Manohar Arora**, R. D. Singh and Amit Kumar (2008) Applications of snow cover estimation in snow melt runoff modeling: A case study of Gangotri glacier basin Himalayas. Proceedings International Workshop on Snow, Ice, Glacier and Avalanches, January 7 – 9, 2008, IIT Bombay, Mumbai. Pp 26 – 33.
- 7 **Manohar Arora**, R. D. Singh, Amit Kumar and Pratap Singh (2009) Melt runoff delaying characteristics of Gangotri glacier. International Conference “Water, Environment, Energy and Society” WEES 2009. New Delhi, 12-16 January 2009. pp 359-365.
- 8 R.D.Singh, **Ma nohar Arora** and Rakesh Kumar (2010) Cli mate Change and Water Adaptation Issues. International Conference on “Hydrology and Watershed Management” JNTU Hyderabad. February 2010. Pp 16-26.
- 9 C hari Prasad, Venkatraman G., Murti, M.V.R. and Arora, M. (2012) Snowmelt runoff modeling for Bhagirathi river basin using SRM and MODIS, Proceedings of Geomatrix’12 International Conference, IITB, India, 26-29 February 2012.
- 10 R.D. Singh, **Manohar Arora** and Rakesh Kumar (2012) Impact of Climate Change on Hydrological Extremes. International Conference on “Impact of Climate Change on Water Resources” Karunya University, Coimbtore. 17-18 August 2012. Pp3.
- 11 **Manohar Arora**, R D Singh and Rakesh Kumar (2012) Climatic Scenarios Generation for a Large Himalayan Basin using Statistical Downscaling. International Conference on “Impact of Climate Change on Water Resources” Karunya University, Coimbtore. 17-18 August 2012. Pp25.
- 12 Rakesh Kumar and **Manohar Arora**, “Climate change adaptation and water nexus with special reference to india”. Presented during the meeting of the Asian Water Cycle Initiative and workshop on climate change adaptation organized by

Asia Pacific Water Forum (APWF) in Tokyo, Japan during 29 September to 2 October 2012.

- 13 Rakesh Kumar and **Manohar Arora** "Draft Implementation Plan for Hydrological Studies for Upper Bhima Basin of India for AWCI" presented during 6th GEOSS Asia-Pacific Symposium, "Accelerating interlinkages in the Asia-Pacific region for global Earth observations", held in Ahmedabad, India from 25 to 27 February 2013.
- 14 C Hariprasad, G Venkatraman, M V R Murthy and **Manohar Arora**, "Application of MODIS snow cover product in snowmelt runoff studies". International Conference on Advances in Water Resources Development & management (AWRDM-2013) 23-27th Oct, 2013. Pp 49
- 15 **Manohar Arora**, Rakesh Kumar, Naresh Kumar and Jatin Malhotra, "Investigation of climate change impact on rainfall, discharge and temperature of Satluj basin. International Conference on Advances in Water Resources Development & management (AWRDM-2013) 23-27th Oct, 2013. Pp 55
- 16 C Hariprasad, G Venkatraman, M V R Murthy and **Manohar Arora**, "Comparision of SRM and SNOWMOD models using MODIS snow cover data for Bhagirathi basin in the Himalayas". IGARSS 2014 / 35th Canadian Symposium on Remote Sensing 13-18th July, 2014. 4010-13.
- 17 **Manohar Arora**, Rakesh Kumar, Naresh Kumar and Jatin Malhotra. "Hydrological modeling and streamflow characterization of Gangotri Glacier". International Conference "Geostatistical and Geospatial Approaches for the Characterization of Natural Resources in the Environment: Challenges, Processes and Strategies". 17-20 October 2014, Jawaharlal Nehru University, Delhi. Pp 79.
- 18 **Manohar Arora**, Rakesh Kumar, R D Singh, Jatin Malhotra and Naresh Kumar. Investigation in observational rainfall characteristics in Gangotri glacier basin. HYDRO 2014 MNIT Bhopal. December 18-20, 2014. Pp 142.
- 19 **Manohar Arora**. Extreme hydro-meteorological events – A case study of two successive flash floods in the Central Himalayas. Workshop on Extreme Climate Events: From Physics to Solutions. Riederalp, Switzerland, March 24 - 28, 2015. Pp 9.
- 20 Allen, S.K., Rastner, P., **Arora, M.**, Huggel, C. and Stoffel M. Rainfall and snowmelt triggered glacial lake outburst: a systematic analysis of the Kedarnath (Uttarakhand, India), June 2013 disaster. Session CR4.5/NH8.6, EGU General Assembly 2015, 16 April 2015.

National Conferences (Published):

1. Pratap Singh, K.S.Ramasastri, Naresh Kumar, **Manohar Arora**, Yatveer Singh and N.K. Bhatnagar (1999) Hydrological behaviour of Dokriani and Chhota Shigri glaciers. National Symposium on Snow, Ice and Glaciers: A Himalayan Perspective, 9-11 March, 1999, Geological Survey of India, Lucknow.
2. Pratap Singh, Naresh Kumar, **Manohar Arora** and Umesh K. Haritashya (2003) Modelling of streamflow for the Gangotri Glacier in the Garhwal Himalayas. Workshop on Gangotri Glacier, organised by Geological Survey of India (GSI), from 26-28 March, 2003 at Lucknow
3. Pratap Singh, **Manohar Arora** and Yatveer Singh (2003) Him evam Himanad avrat jal sangrah shetra ka jalvigyaniya pratirupan. (Hindi) Jal sansadhan ke shetra me bhavi chunnoutiyan 16-17th December 2003.
4. **Manohar Arora**, Pratap Singh, R D Singh and Rajan Vatsa (2006) Impact of climate change on water environment. National Seminar on Environment: Status and Challenges Ahead. 19-20th January 2006 at PAU Ludhiana.
5. **Manohar Arora**, R. D. Singh and Amit Kumar (2007) Status of Climate change in India. National Seminar on "Threats: Global Warning to Global Warming". 31st March 2007 at KLDVAV College Roorkee. Pp 29 – 44.
6. N. K. Bhatnagar, **Manohar Arora** and R. D. Singh (2007) Himnadiya basin se ane vale jal pravah par ritu parivartan ke prabhav. National Seminar (Hindi) on "Bharatvarsha ke aviral vikas me jal sansadhno ki bhumika" 26 -27 September, NIH Roorkee, 78 -89.
7. **Manohar Arora**, R. D. Singh and Hukam Singh (2007) Himalaya basin me himachidit shetra ke apshya se vayutap ka sambandh. National Seminar (Hindi) on "Bharatvarsha ke aviral vikas me jal sansadhno ki bhumika" 26 -27 September, NIH Roorkee, 90 -101.
8. D. S. Rathore, **Manohar Arora** and R. D. Singh (2007) Sudur sanvedan technique ka him jalvigyan me upyog. National Seminar (Hindi) on "Bharatvarsha ke aviral vikas me jal sansadhno ki bhumika" 26 -27 September, NIH Roorkee, 407 -421.
9. **Manohar Arora** and R. D. Singh (2007) Impact of Climate Change on glacial melt and river flows. National Seminar on "Adapting to Climate Change". 05 -06 December 2007 at National Water Academy, Pune, 58 – 79.
10. **Manohar Arora**, R.D. Singh and Amit Kumar (2008) Estimates and analysis of suspended sediment from a glacierized basin in the Himalayas. National Snow Science Workshop 2008 (NSSW-08), pp 193-201, 11 – 12 January 2008, SASE Chandigarh. Pp 35.

11. **Manohar Arora**, R. D. Singh, Rakesh Kumar and Amit Kumar (2008) Suspended sediment estimation in the melt stream from Gangotri Glacier. 13th National Symposium on Hydrology, 28 – 29 August, 2008, New Delhi
12. Rama Mehta, **Manohar Arora** and Sharad K Jain (2008) Rainfall-Runoff modeling for Satluj River: a Neuro Fuzzy Set Approach. 13th National Symposium on Hydrology, 28 – 29 August, 2008, New Delhi
13. **Manohar Arora**, R.D.Singh and Rakesh Kumar (2008) Climate Change and glacial lake outburst floods (GLOFS) – A Review. National Seminar on Conservation and Restoration of Lakes, October 2008, Nagpur.
14. **Manohar Arora (2008)** Impact of Climate Change on Himalayan Water Resources. Melting Mountains, Wilting Glaciers & The quest for Shiva's Trident. Conference on celebrating 50 years of the Indian Mountaineering Foundation. 9th November 2008. Kolkata.
15. **Manohar Arora** and R. D. Singh (2008) Impact of Climate Change on glacial melt and river flows. National Workshop on "Global Climate Change and its impact on Water Resources". 06 December 2008 WRDM IIT Roorkee.
16. **Manohar Arora**, R. D. Singh and Rakesh Kumar (2009) Climate change implications on runoff of a glacierised Himalayan basin. National Conference on "Geomatics and Impact of Climate Change with Specific Reference to Mountain Ecosystem" Feb 4th – 6th, 2009. FRI Dehradun. Pp 6.
17. **Manohar Arora**, R. D. Singh and Rakesh Kumar (2009) Impact of Climate change on snow and glacier fed rivers. National Workshop on "Water Resources Development in Uttarakhand " March 6^h, 2009. CWC Dehradun. Pp 6.
18. **Manohar Arora**, R. D. Singh and Rakesh Kumar (2009) Hydropower development of Indian Himalayas in the face of climatic and hydrological uncertainties. Hydro -2009, National Seminar Hydrpower Stations – Advancement in Harnessing & Up Keeping. July 2nd – 3rd, 2009, Dehradun. Pp 84 – 97.
19. Niraj Agarwal, **Manohar Arora**, N.K. Goel and D.S. Arya (2009) Estimation of snow cover area in Bhagorathi catchment upto Tehri Dam site. Hydro -2009, National Seminar Hydrpower Stations – Advancement in Harnessing & Up Keeping. July 2nd – 3rd, 2009, Dehradun. Pp 110 – 121.
20. Rakesh Kumar, **Manohar Arora**, Sanjay Kumar and R.D. Singh (2009) Development of Regional Flood Frequency Relationships using L – moments for gauged and ungauged catchments of North Brahmaputra river system. Hydro -

2009, National Seminar Hydropower Stations – Advancement in Harnessing & Up Keeping. July 2nd – 3rd, 2009, Dehradun. Pp 135 – 147.

21. **Manohar Arora**, Rakesh Kumar and R D Singh (2009) Impact of climate change on water resources. National Conference on “Earth System Processes and Disaster Management”. 15 – 17 September 2009, NCAOR, Goa. Pp30.
22. D S Rathore, **M Arora**, R D Singh, G Gupta and A Dheeman (2009) Snow and Ice mapping in Bhagirathi basin up to Loharinag Pala using remote sensing. National Symposium on “Climate change and water resources in India”. 18-19 November, 2009. IAH, NIH Roorkee, pp78 -79.
23. Naresh Kumar, **Manohar Arora** and Hukam Singh (2009) Temperature variability analysis of Gangotri glacier. National Symposium on “Climate change and water resources in India”. 18-19 November, 2009. IAH, NIH Roorkee, pp80.
24. **Manohar Arora**, Rakesh Kumar and Naresh Kumar (2010) Temperature Index Modelling of Gangotri Glacier melt Stream. National Workshop on “Case Studies on Real Time Hydrological Modelling for Ganga Brahmaputra Basin”. NIT Rourkela. 23-25 September 2010, pp 20.
25. R D Singh, **Manohar Arora** and Rakesh Kumar (2010) Climate Change and Himalayan Water Resources. National Workshop on “Case Studies on Real Time Hydrological Modelling for Ganga Brahmaputra Basin”. NIT Rourkela. 23-25 September 2010, pp 4.
26. **Manohar Arora** (2010) Climate Change and water Resources of India. National seminar on “Global warming and its effects on water resources”. Graphic Era University, Dehradun. Dec 03-04, 2010. Page 1-14.
27. **Manohar Arora**, Rakesh Kumar, R.D. Singh and Naresh Kumar (2010) Climate Variability Analysis on Flow Duration Curve of a Large Himalayan River. Regional Workshop on “Water Availability and Management in Punjab”. Punjab University, Chandigarh. December 13-15, 2010. 101-107.
28. A.R. Senthil Kumar, S.D. Khopragade, **Manohar Arora**, R.D.Singh and R.K. Nema (2010) Streamflow Modelling at Rampur, Satluj Basin, Punjab. Regional Workshop on “Water Availability and Management in Punjab”. Punjab University, Chandigarh. December 13-15, 2010. 109-121.
29. R D Singh, **Manohar Arora** and Rakesh Kumar (2010) Snow/Glacier melt contribution to run-off in the Himalayan Rivers – Assessment of potential impact of climate change. National Convention of “Global India Scientists and Technocrats” GIST 2010, Pune 26-27 Dec, 2010, pp 14.

30. **Manohar Arora**, R D Singh, Rakesh Kumar and Naresh Kumar (2011) Comparison of regional rainfall characteristics of south west monsoon rainfall, India. National Conference on Water, Energy and Biodiversity, Agartala, 20-22 August 2011. Pp 32-38.
31. Naresh Kumar, **Manohar Arora**, Rakesh Kumar and Hukam Singh (2011) Gangotri Mimmnad keg alit apwah ke vilambit abhilakshan. Chaturth Rashtriya Jal Sangoshthi -2011, NIH Roorkee. 16-17 December, 2011.
32. Rakesh Kumar, Tilak Raj Sapra, Pankaj Mani, Jagdish Patra and **Manohar Arora** (2011) L Moments evam paramprik takniqo dwara vibhin pratyagaman kaal ke liye anklet barh kit ulna. Chaturth Rashtriya Jal Sangoshthi -2011, NIH Roorkee. 16-17 December, 2011.
33. **Manohar Arora** and Rakesh Kumar (2011) Climate Change and Water Resources of India. Hydro -2011, NIT Surat, 29-30 Dec, 2011, pp 36.
34. Rakesh Kumar, P Mani, **Manohar Arora**, Jagdish Patra and Archana Sarkar (2012) Regional Flood Frequency analysis Using L-Moments for Mahi and Sabarmati Subzone 3(A). National Symposium on "water Resources Management in Changing Environment (WARMICE-2012), NIH Roorkee, Feb 8-9, 2012.
35. Avinash Agarwal, **Manohar Arora** and R K Nema (2012) Hydrological Study for Sustainable Development of Hilly Watersheds in Uttarakhand. Indian Society of Agricultural Engineers (ISAE), Feb 27-29, 2012, Pantnagar. PP 252.
36. **Manohar Arora** and Rakesh Kumar (2012) "**Climate change and water resources of India** " presented during the workshop held at GBPIHED during 27-28 Feb, 2012.
37. Chelamallu Hari Prasad, G Venkatraman, M.V.R. Murti, and **Manohar Arora** (2012), Meteorological analysis of Bhagirathi river basin for snowmelt runoff, TROPMET- 2012, National Symposium on frontiers of Meteorological with special reference to the Himalaya, November 2012.
38. **Manohar Arora**, Rakesh Kumar, Naresh Kumar and Jatin Malhotra (2012) Analysis of Meteorological Parameters around Gangotri Glacier. HYDRO 2012. IIT Bombay Dec 7th and 8th 2012.
39. Senthil Kumar AR, Rai S P, Khopragade S D, Agarawal A, **Arora M** and Hukam Singh (2012) Streamflow Modelling of Bhagirathi River at Gomukh Using ANN. HYDRO 2012. IIT Bombay Dec 7th and 8th 2012.
40. Rakesh Kumar, Jagdish P Patra, Pankaj K Mani and **Manohar Arora** (2013) Integrated Flood management. Proceedings of National Conference on Hydrology

with Special Emphasis on Rain Water Harvesting (NCHRWH-2013). November 15-16, 2013. Poornima Group of Institutions, Jaipur

41. **Manohar Arora**, Rakesh Kumar, Jatin Malhotra and Naresh Kumar (2014) Discharge measurement in high altitude streams dominated by melt and rainfall contribution. Proceeding of seminar on Hydrometry. Organised by BIS & CWPRS. 14-23 pp.
42. **Manohar Arora**, Rakesh Kumar, Jatin Malhotra and Naresh Kumar (2014) Characterization of suspended sediment in meltwater from Gangotri glacier. National Conference on Emerging Trends in Water Quantity and Quality Management. Poornima University Jaipur. 19-20 December 2014. Pp 99.
43. **Manohar Arora**, Rakesh Kumar, Naresh Kumar and Jatin Malhotra (2014) Study of Uttarakhand Floods 2013: Facts and Plausible causes. Third India Water week 2015. New Delhi. 13-17 January 2015. Pp140.
44. Rakesh Kumar, R.D.Singh, **Manohar Arora** and J P Patra (2014) Research and Application in Hydrology and water Resources Development and Management – How to bridge the gap ?. Third India Water week 2015. New Delhi. 13-17 January 2015. Pp9.

National Journal (Published)

1. Pratap Singh and **Manohar Arora** (2007) Water Resources Potential of Himalayas and Possible Climate Change. Jal Vigyan Sameeksha, Volume 22, 2007, 109- 132.
2. R D Singh, **Manohar Arora** and Rakesh Kumar (2009) Climate change impact on water resources in India. Mausam (Diamond Jubilee Volume, 2009), 91-100.
3. R D Singh, **Manohar Arora** and Rakesh Kumar (2010) Impact of Climate Change on Water Resources. Yojana, July 2010, 36-40.
4. **Manohar Arora** and Rakesh Kumar (2012) Environmental Flow Requirement and its Assessment. Journal of Hydrologic Research and Development, Vol 25, 2010. 37-52.
5. Naresh Kumar, **Manohar Arora**, Rakesh Kumar and Hukam Singh (2012) Gangotri Himnad ke Galit Apvah Ke Vilambit Abhilakshan. Bhartiya Vaigyanik Evam Audyogik Anusandhan Patrika, Varsh 20 Ank 1 June 2012. Prasht 135-140.

6. Chelamallu H. P., Venkataraman, G., Murti, M.V.R., and **Arora , M.**,(2014) Metrological analysis of Bhagirathi river basin for snowmelt runoff , Vayumandal, (**Accepted**)
7. **Manohar Arora**, Rakesh Kumar and N K Varshney (2014) Downscaling Vidiyan Evam Jalvigyaniya Nidarshan Padhti. Bhartiya Vaigyanik Evam Audyogik Anusandhan Patrika, Varsh 22 Ank 1 June 2014. Prasht 37-40.
8. Avinash Agarwal, **M Arora** and R K Nema (2015) Spring's of mid western Himalayas (Uttarakhand) and their response. Accepted in Mausam