

# Sediment Monitoring Program

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# Background

## ➤ Sediment Monitoring Program

- 1988 –1990
- In collaboration with HRL Wallingford, UK.
- Funded by Gezira Rehabilitation & Modernization (WB).
- Covered 52 locations (Gezira Scheme & Blue Nile River).

## ➤ From 1990 – Now

- More coverage (Rahad, Main Nile, Girba Dam ...).
- limited budget.
- modern equipment & devices



# Goals

- Dams operation.
- O & M of Irrigation schemes.
- Avail data & information for researchers/scientists.
- Designers to develop new design procedures .



# Process & Stages

*Sedimentation is known as the deposition of fine silt and clay in the water bodies such as reservoirs, watercourses, etc....:*

- Erosion.
- Entrainment.
- Transportation.
- Compaction.



# Impacts (-)

- Reduction in Reservoirs Capacities.
- blockage of inlet channels (pumps)
- Power generation intrusion
- obstacle to water delivery.
- good habitat for weed growth.
- Water pollutaion.
- etc ...



# Impacts (+)

- Increase soil fertility.
- Provide building materials
- Roads construction materials.
- Ecosystem services (pots ...).
- etc ...



# Coverage

- Collecting the samples
- Khartoum @ Soba
- Tamanyat (stopped 8
- Shambat
- DS Alturaby Abuosha
- Hantoub
- Blue Nile @ Sennar
- Wad Alais
- Gezira @ Sennar
- Managil @ Sennar
- Gezira main @ 57
- New Gezira @ 57
- New Managil @ 57
- DS Gezira main



# Sampling Procedure

A. Dip Sampling.

B. Depth Integration Sampling

C. Point Integration Sampling.



# Analysis - 1

## ➤ Classical Method

1



3



2



4



**It is time consuming !!!**

# Analysis – 2

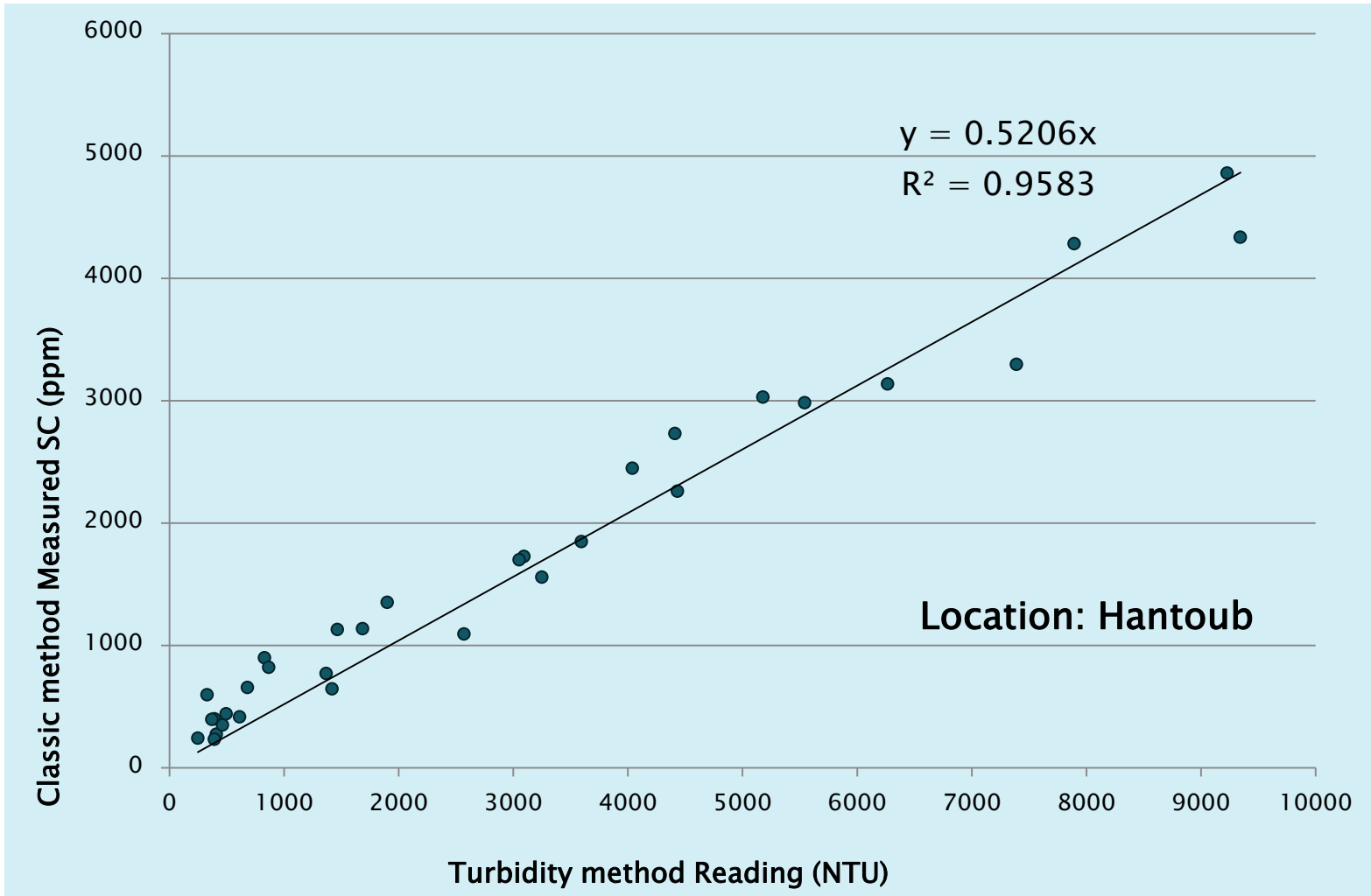
## ➤ Turbidity Meter Method

- turbidity .
- NTU.
- 0.01 – 10,000.
- time saving.
- Bench device.
- etc ...

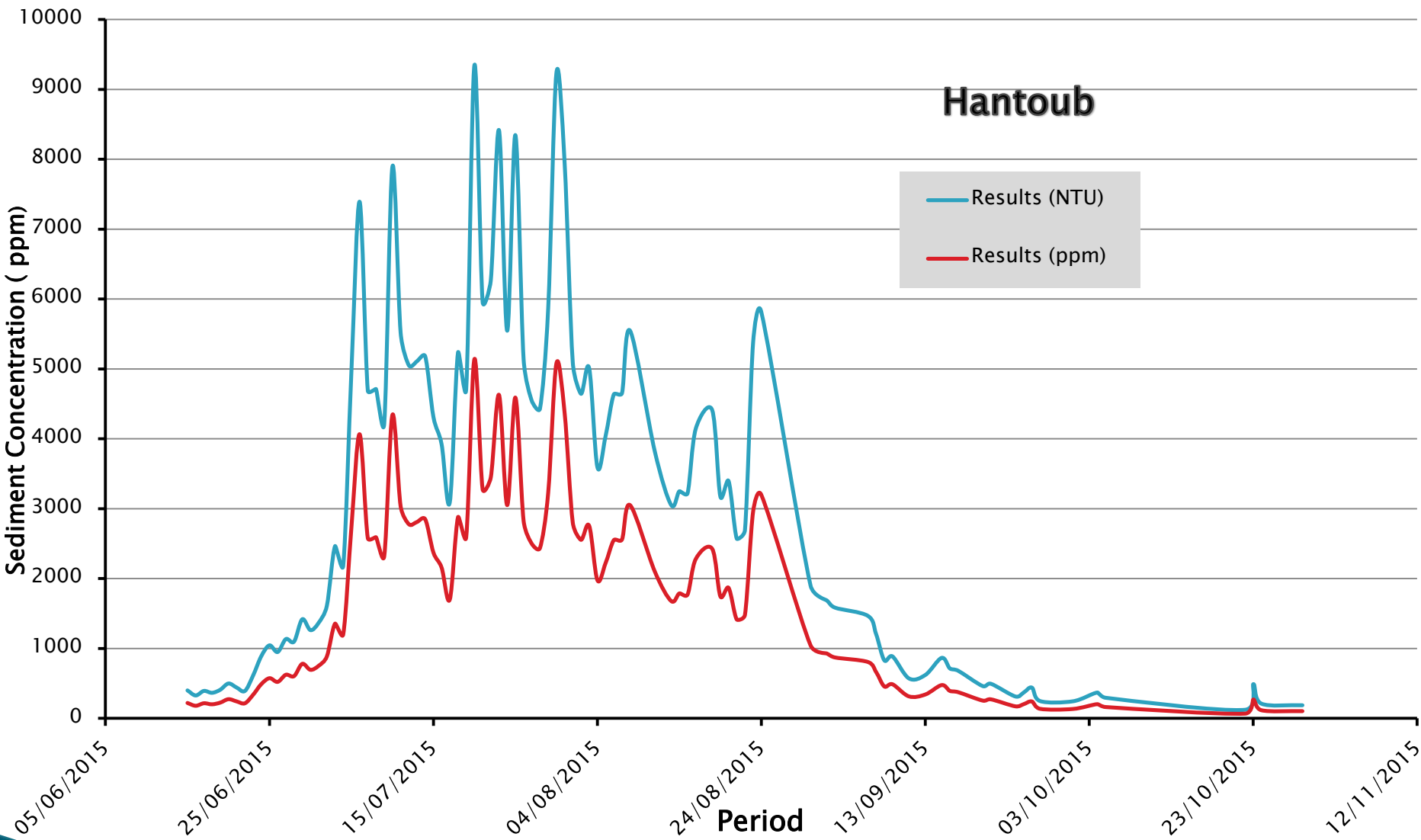


# Analysis - 3

➤ Classical Method VS. Turbidity

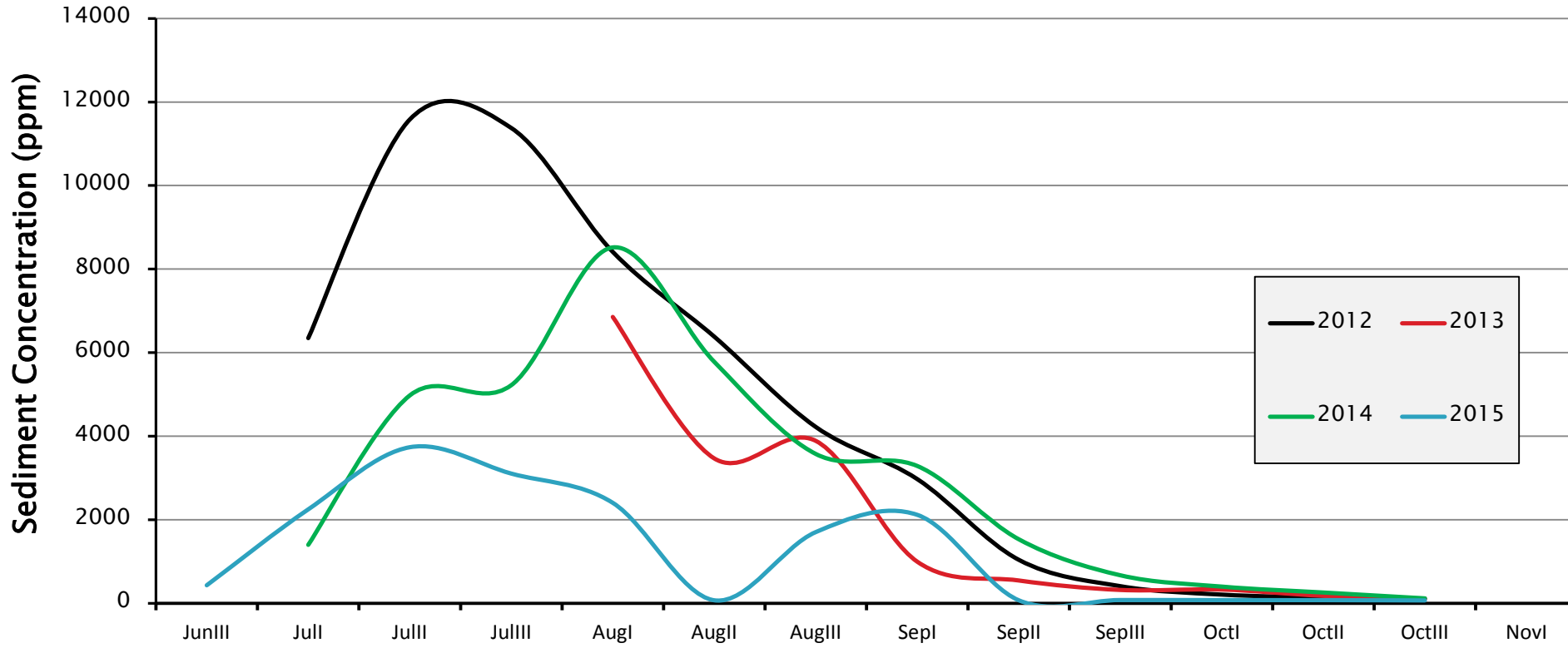


# Main Findings – 1

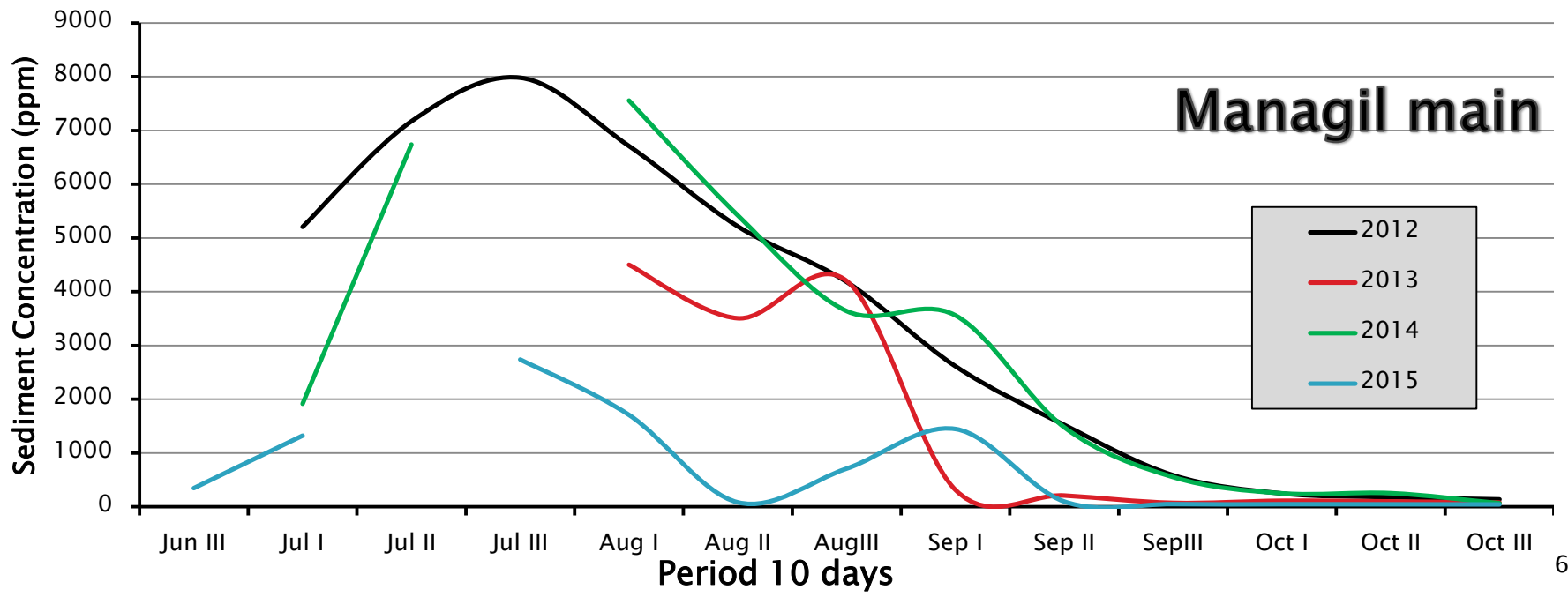
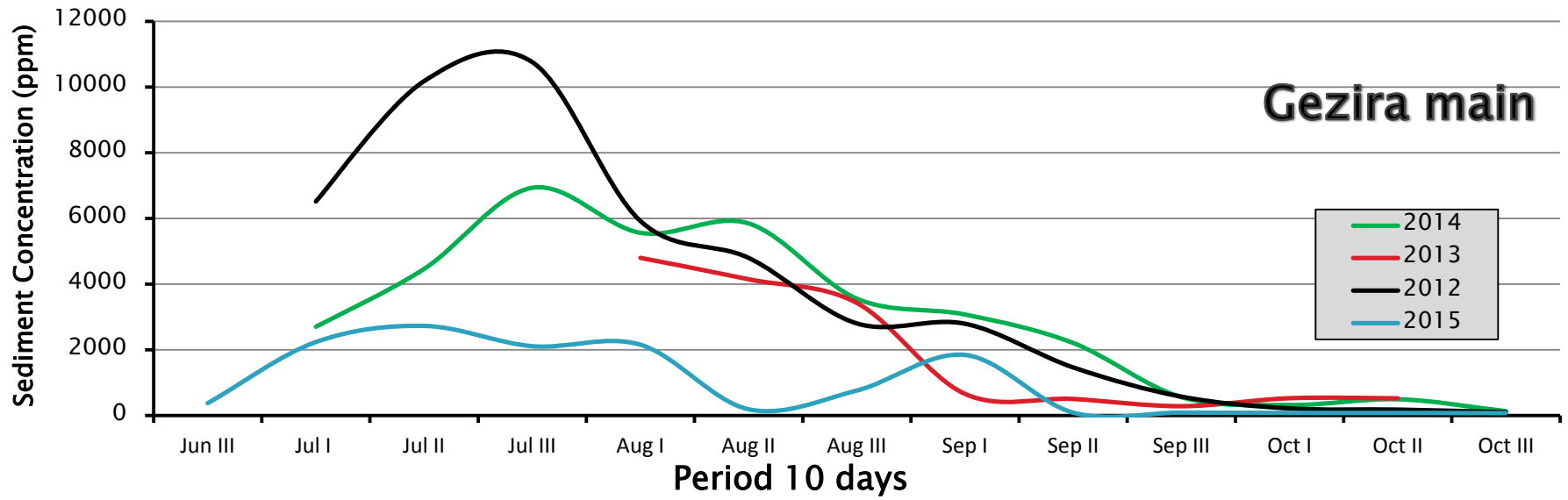


# Main Findings - 2

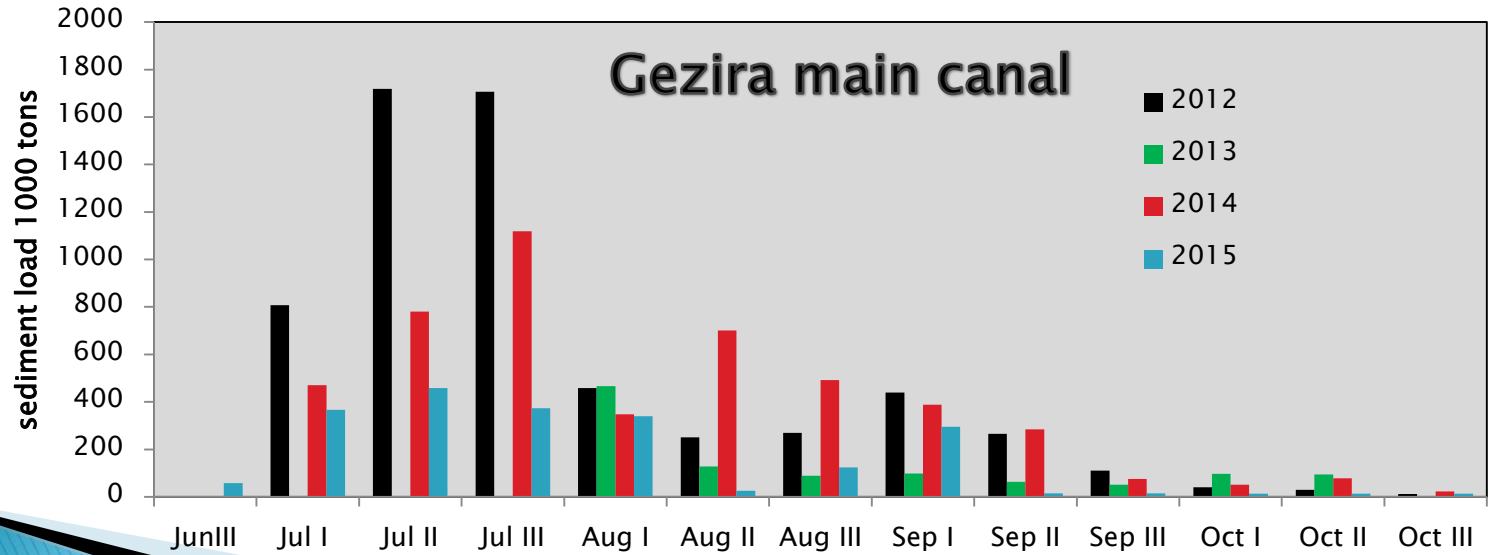
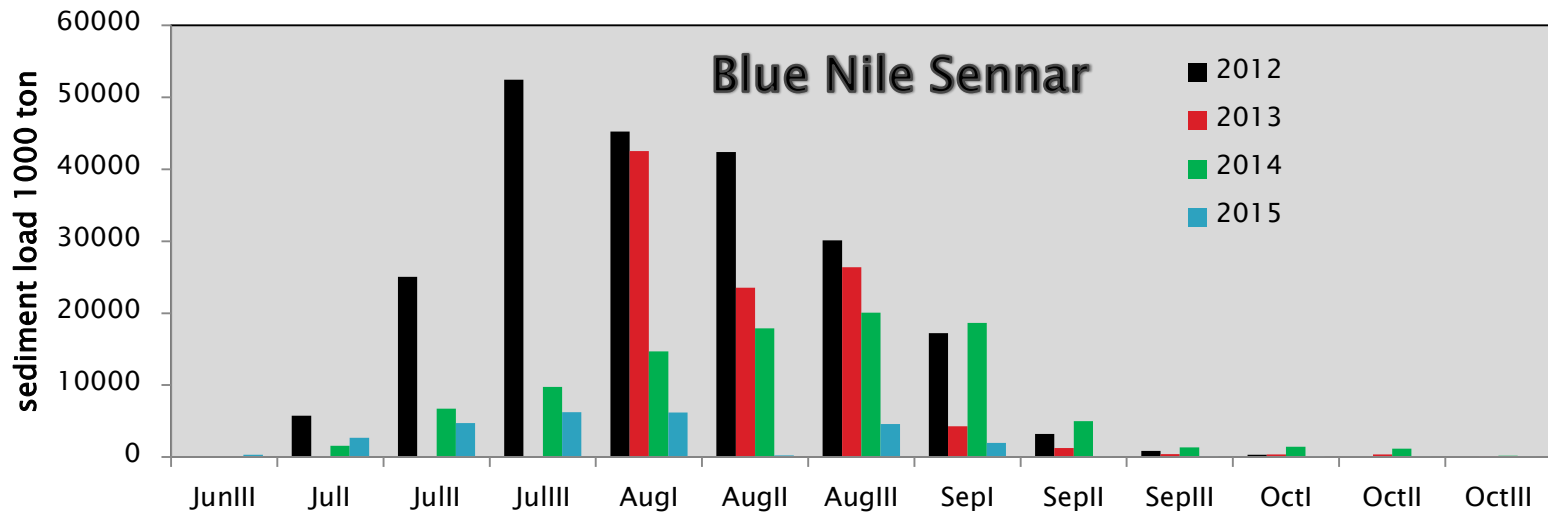
## D/S Blue Nile River at Sennar - 2012 to 2015



# Main Findings - 3



# Main Findings – 4



# The way forward – 1

## 1 – Portable Turbidity meter



# The way forward-2

## 2-Water Quality





# Preliminary Results

Name of well	Tem C	PH	TDS	Cond	Salt	Turbidity	Alkalinity	Ammonia NH3	Ammonium NH4	Total Copper	Hardness	Iron LR	Nitrate	Sulphate	Chloride
standards		6.5–8.5	1000			5 NTU		1.5		1.5		0.3	50	250	250
ديم ازهرى	33.6	7.14	277	400	198	2.71	168	ND	ND	0	162	0.03	7.48	18	87
السوق الشعبي	34	7.07	196	292	145	272	0.118	0.17	0.22	0	157	0	0.76	36	251
اركويت	33.8	7.08	221	337	168	0.74	184	ND	ND	0.13	166	0.02	0.49	14	43
الحلة الجديدة	23.8	7.94	207	312	155	2.48	173	0.13	0.16	0	105	0.01	0.59	11	129
منتزه الجزيرة	24.6	7.7	628	865	436	0.858	273	0.4	0.54	0	371	ND	20.37	132	415

Thanks