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SOLAR SEAWEATHER AND POLLUTION TRANSMISSION BOUY

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***Abstract*—**

Light transmission through a water sample is determined by physical properties such as particle size, shape, composition, and chemical properties. There is enormous variation in these properties in the environment, resulting in a nearly infinite number of unique optical characteristics for natural and man-influenced water, however, consistent light transmission through a water sample is essential for precise measurements. Light transfer through a water sample is affected in complex ways by water molecules, material dissolved in the water, and scattering by suspended particles as illustrated in Light is generally used in remote sensing.

Remote monitoring can be defined as sensing qualitatively and/or quantitatively a chemical or physical parameter in the environment where the monitoring instrument and the parameter under investigation are spatially separated.

According to simulations carried out, a pressure of 1 kPa has been applied to the buoy, on each surface excepted for the surface floating on sea water. It is considered to point out a shock on the systems. Deformation is the measure of length variation due to forced stretching or compression. Being deformation, a ratio of two lengths, it is a dimension-less quantity.

$$\sigma = \frac{P}{A}$$

and a deformation

$$\varepsilon = \frac{\Delta l}{l_0}$$

Introduction (Background)

An Approach is fresh water injection, the source and cost of this might be expensive and this is particularly difficult in regions where there is scarcity of water. Effects of climate change and sea level rise are some of the factors to consider when choosing control techniques for saltwater intrusion. Climate change has resulted in increase in the sea level because rising temperature causes expansion of seawater and melting of glaciers/ice caps. This change in climatic condition also results in reduction in the atmospheric pressure which as a result leads to increase in water level in seas .The new technique for controlling saltwater intrusion is the Abstraction, Desalination and Recharge (ADR) which consists of three (3) steps; abstraction of brackish water from the saltwater, desalination of the abstracted brackish water using treatment process, and recharge of the treated water into the aquifer. Abstraction-Recharge process helps to move

freshwater/saltwater interface towards the sea and is considered as an efficient method to control saltwater intrusion.Other technique of control is maintaining a seaward hydraulic gradient and a proportion of the natural freshwater recharge flowing into the sea .Increase aquifer recharge using controlled river flood is another technique, in that, some adjacent river areas that gets flooded during high volume rainfall events can slowly infiltrate after the storm. Back movement of seawater could be seen after using this method within one year. The movement may be insignificant, but in collaboration with other methods, it is possible to eradicate saltwater intrusion.

I. LITERATURE SURVEY

A. In October 2013

''In situ'' sea water monitoring is a very challenge since it is very complicated because of the presence of vibrations, waves and shocks which instrumentation and apparatuses are undergone to. If lidar configurations are adopted, they are suitable for resisting to vibrations especially for fluorescence lidar. But as proposed in this paper, ''in situ'' spectroscopic architecture is possible to be used but it must be able to stay in vibrating conditions in which not all source lights can be captured after passing through the sample. There is remote control of the system by means of dedicated algorithm . This case-study also shows the quality and the quantity of lines of force that can affect the results of measurements. In our case, only during side vibrations there is a risk of structural breaking.

B. In November 2019

. The safety of navigation is always an important task for the maritime transport, such mission is realized thanks to several technologies and infrastructures, that can be on board to the ship such as RADAR - ARPA, AIS (Automatic Identification System), ECDIS (Eletronic Chart Display and Information System), or on the earth, such as VTS (Vessel Traffic) or AToN (Aid To Navigation) . Specifically, the International Association of Lighthouse Authorities (IALA) defined virtual and synthetic AToN as a new way to provide additional information using the digital technology , nevertheless the reliable system even adopted is based on a system of light signals. Such systems allow to the ships to navigate in safety without any electronic device and their operability it is fundamental for the safety of navigation, for this reason they should be always monitored, especially if their installation provides a guide to enter or to leave from a port. Of course, a good maintenance is essential to obtain a high reliability, although some failures could happen. Furthermore, the most part of light signals are floating and, due to bad weather, the signal could be adrift, indeed, after a storm, is frequently that the line of anchorage can break. It is important to track and to rescue the light-signal through as quickly as possible, because adrift buoy is a constant danger for the navigation, indeed it can collide a ship.

C. In 2020,

Dr. Narayanaswamy and his team of 4 introduced the fish tank monitoring system using IOT. This system automatically monitored, controlled and provided real time status of pressure, temperature and water level. The project was a data feeding system where various parameters will be monitored using different sensors. The parameters like temperature, pH, water level, setting the brightness or darkness required for the tank. The proposed system is for fishes in a home aquarium where the temperature is the most important parameter and the suitable range is between 20-23 degrees Celsius and should be maintained. The track is kept by the temperature sensor where the updates should be going to the user.

D. In 2020

Maria Geme B.Palconit, Ronnie, Rogelio Ruzcko Tobias,Jonne, Alejandrino, Vincent Jan D. Almero1, Argel A. Bandala1, Ryan Rhay, Vicerra, Edwin Sybingco,Elmer, Dadios from De La Salle University ,Philippines, came with the idea of fish tank monitoring system using IoT. 3 main parts of the system are water quality monitoring, on-demand feeding, video surveillance of fish tank.Water quality monitoring system consisted of total dissolved solids (TDS), dissolved oxygen (DO), the potential of hydrogen (pH).On-demand feeding system consisted of triple-axis accelerometer with waterproof container. Normalized z-axis used to sense the movement of sensor. Automated video recording was done by placing webcam overhead which was connected to laptop directly. The windows PowerShell and task scheduler were used to run application automatically every 10 mins and save the data. Monitoring system involves four simultaneous data transmissions.

II. PROBLEM DEFINITION

Tidal fluctuations

(ii) Long-term climate and sea level changes

(iii) Fractures in coastal rock formations

(iv) Seasonal changes in evaporation and

(v) Recharge rates

Recharge rates can also be lowered in areas with increased urbanization and thus impervious surfaces. Intrusion has also occurred in areas because of water levels being lowered by the construction of drainage canals . Climate change is a long-term change in the weather pattern especially due to an increase average atmospheric temperature. Climate change can result from natural or/and man-made activities. Effects of change in climate on coastal region on long-term is alarming. Sea level rise is a major effect which results in increase in coastal erosion and sea water intrusion .The consequences of climate change on groundwater are long term and can be far reaching.One of the major consequences is the increased migration of salt water inland in coastal aquifers.Therefore, the present state of groundwater tables, piezometric levels and salinity distribution and exploitation, i.e. location and rates of abstraction should be known.

III. CONCLUSION

The Internet of Things (IoT) is the recent way to

join low-cost hardware and cloud computing, in order to manage a network of physical devices and their data collection.

During the last years the number of devices connected to IoT is dramatically increased, as well as, the number of webservices which allow to collect and manage the data. Most of these services are free for personal use, and low-cost for commercial purposes. In this work, the IoT technology was employed to monitoring the health status of maritime signals, such as buoys, seamarks, beacons, etc. The developed system allows to react swiftly and efficiently if a problem occurs, in order to preserve both the safety of navigation and the signals integrity. Furthermore, the hardware equipment developed is low-cost as

well as the webservices employed to notify possible problems.

The system was, initially, developed to follow the position of a

buoy using a GNSS device for this reason, even now, the system .

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