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Review Article

Review Influence Normal Diesel Emissions on Agricultural Environment

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ABSTRACT

Diesels fuel classified one of non-renewable energy, its caused may damage on the person's health, environments and crops. because of various compounds and derivatives in the family of nitrogen oxides, including nitrogen dioxide, nitric acid, nitrous oxide, nitrates, and nitric oxide. Also CO_2 effect on agricultural environments, CO_2 levels predicted by the end of the century, will have significant effects on humans. Unhealthy blood CO_2 concentrations have been measured from people in common indoor environments where thinking ability and health symptoms have been observed at levels of CO_2 above 600 ppm being a major aspect of climate change for relatively short-term exposures to presence of heat and sunlight. Children, people with lung diseases such as asthma, and people who work or exercise outside, are susceptible to adverse effects such as damage to lung tissue and reduction in lung function. Other impacts from ozone include damaged vegetation and reduced crop yields. In this paper we discuss emissions on agricultural crops.

Keywords: CO_2; Non-renewable energy; Lung diseases; Agricultural crops

INTRODUCTION

Nitrogen compounds are present in the atmosphere in both oxidised and reduced forms. The reduced compounds include ammonia (NH_3) and ammonium (NH_4). The oxidised compounds include nitrous oxide (N_2O), nitrogen oxide (NO), nitrogen dioxide (NO_2), nitrous acid (HNO_2), nitric acid (HNO_3), Peroxyacetyl Nitrate (PAN) and particulate nitrate (NO^{3-}). NOx is defined as $NO+NO_2$. Nitrous oxide (N_2O) is emitted to the atmosphere due to bacterial activity in the soil. It is emitted also from anthropogenic sources (e. g. catalytic reduction processes) and acts as a greenhouse gas. However, it is disconnected from the NOx chemistry in the atmosphere and is not important for assessment of air quality. Nitrogen oxides are emitted mainly (in most cases >90%) as NO. NO_2 is formed relatively rapidly from NO by reaction with ozone or radicals, such as HO_2 or RO_2. Via a number of different atmospheric reactions, some nitrogen oxides will finally become HNO_3/NO^{3-}, which, with NO_2 are removed from the atmosphere wet and dry deposition processes. Although it is not the major nitrogen oxide species in all areas, NO_2 is one of the most important air pollutants in urban areas, as it is the most Significant nitrogen oxide species from a human health point of view. Nitrogen oxides played the role in the formation of photochemical oxidants, and this position paper will deal mainly with nitrogen dioxide and to a lesser extent, NO in air. The various sources, concentrations in urban and rural air, and the environmental effects of nitrogen oxides are considered. The environmental effects include human health effects, material damages and ecosystem effects caused by NO_2 in the air, and deposition of nitrogen compounds. Effects on the ecosystem will mainly be the same, whether oxidized or reduced nitrogen compounds are deposited also takes oxygen from air so the crops can't do photosynthesis. For this reason, reduced nitrogen compounds will impact the assessment of oxidized nitrogen in the environment. A further factor is the interaction between nitrogen oxides and ammonia in the atmosphere. The Directive on Ambient Air Quality Assessment and Management required the establishment of limit values and/or alert thresholds. When setting the limit values and, if appropriate, an alert threshold, the following factors may be taken into account:

- The degree of exposure of sectors of the population, and in particular sensitive groups
- Climatic conditions
- Sensitivity of flora and fauna and other habitats
- Historic heritage exposed to pollutants
- Economic and technical feasibility;
- Long-range transport of pollutants, and secondary pollutants, including ozone.

The average ambient concentration of CO_2 (in the fresh air) has been rapidly increasing and is currently around 410 ppm. This increase is due to humanity's activities, largely resulting from the

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burning of fossil fuels [1]. Very early primate ancestors of humans were evolving around 23 million years ago. Throughout all of the ensuing period of human evolution, it is clear that levels of CO_2 in the ambient atmosphere remained relatively stable at, below or close to 300 parts per million (ppm), this being derived from a combination of studies of relict features including air trapped in ice cores [1], the Composition of fossil plankton [2] and Carbon-13 (13C) content in fossil plant material. Since about 1820, CO_2 levels have increased rapidly and are now above 400 ppm. This is a potentially catastrophic problem for many species of animals, including humans, for a number of reasons. The most well publicised issue is that of climate change. The mechanisms and history of global warming associated with CO_2 increase are well understood and the increase in atmospheric energy gradients will produce more extreme temperatures and weather events. Too many people, climate change itself may not appear to be catastrophic – for example it might be possible to escape the effects of even a 5°C increase this century by moving to a cooler and safer geographic location.

LITERATURE REVIEW

Reviews in the carbon cycle due to climate changes

- Warming reduces the solubility of CO_2 and therefore reduces uptake of CO_2 by the ocean.
- Increased vertical stratification in the ocean is likely to accompany increasing global temperature. The likely consequences include reduced outgassing of upwelled CO_2, reduced transport of excess carbon to the Deep Ocean, and changes in biological productivity.
- On short time-scales, warming increases the rate of heterotrophic respiration on land, but the extent to which this effect can alter land-atmosphere fluxes over longer timescales is not yet clear. Warming, and regional changes in precipitation patterns and cloudiness, are also likely to bring about changes in terrestrial ecosystem structure, geographic distribution and primary production. The net effect of climate on NBP depends on regional patterns of climate change.

Effects Co_2 of climate

Solar radiation, temperature and available water affect photosynthesis, plant respiration and decomposition, thus climate change can lead to changes. A substantial part of the inter-annual variability in the rate of increase of CO_2 is likely to reflect terrestrial biosphere responses to climate variability . Warming may increase NPP in temperate and arctic ecosystems where it can increase the length of the seasonal and daily growing cycles, but it may decrease NPP in water stressed ecosystems as it increases water loss. Respiratory processes are sensitive to temperature; soil and root respiration have generally been shown to increase with warming in the short term although evidence on longer-term impacts is conflicting. Changes in rainfall pattern affect plant water availability and the length of the growing season, particularly in arid and semi-arid regions. Cloud cover can be beneficial to NPP in dry areas with high solar radiation, but detrimental in areas with low solar radiation. Changing climate can also affect the distribution of plants and the incidence of disturbances such as fire (which could increase or decrease depending on warming and precipitation patterns, possibly resulting under some circumstances in rapid losses of carbon), wind, and insect and pathogen attacks, leading to Changes in NBP. The global balance of these positive and negative effects of climate on NBP depends strongly on regional aspects of climate change. The climatic sensitivity of high northern latitude ecosystems (tundra and taiga) has received particular attention as a consequence of their expanse, high carbon density, and observations of disproportionate warming in these regions [1]. High-latitude ecosystems contain about 25% of the total world soil carbon pool in the permafrost and the seasonally-thawed soil layer. This carbon storage may be affected by changes in temperature and water table depth. High latitude ecosystems have low NPP, in part due to short growing seasons, and slow nutrient cycling because of low rates of decomposition in waterlogged and cold soils. Remotely sensed data and phonological observations [2] independently indicate a recent trend to longer growing seasons in the boreal zone and temperate. Such a trend might be expected to have increased annual NPP. A shift towards earlier and stronger spring depletion of atmospheric CO_2 has also been observed at northern stations, consistent with earlier onset of growth at mid- to high northern latitudes [3]. However, recent flux measurements at individual high-latitude sites have generally failed to find appreciable NEP [4]. These studies suggest that, at least in the short term, any direct effect of warming on NPP may be more than offset by an increased respiration of soil carbon caused by the effects of increased depth of soil thaw. Increased decomposition, may, however also increase nutrient mineralisation and thereby indirectly stimulate NPP [5]. Large areas of the tropics are arid and semi-arid, and plant production is limited by water availability. There is evidence that even evergreen tropical moist forests show reduced GPP during the dry season [6] and may become a carbon source under the hot, dry conditions of typical El Niño years. With a warmer ocean surface, and consequently generally increased precipitation, the global trend in the tropics might be expected to be towards increased NPP, but changing precipitation patterns could lead to drought, reducing NPP and increasing fire frequency in the affected regions.

Reviews in Nox cycle due to climate changes

Because of NOx are transparent to most wavelengths of light (although NO_2 has a brownish color and the rare N_2O_3 is black), they allow the vast majority of photons to pass through and, therefore, have a lifetime of at least several days. Because NO_2 is recycled from NO by the photo reaction of VOC to make more ozone, NO_2 seems to have an even longer lifetime and is capable of traveling considerable distances before creating ozone. Weather systems usually travel over the earth's surface and allow the atmospheric effects to move downwind for several hundred miles. This was noted in EPA reports more than twenty years ago [7]. These reports found that each major city on the East coast has a plume of ozone that extends more than a hundred miles out to sea before concentrations drop to 100 parts per billion (ppb). Another report cited the same phenomenon for St. Louis. Therefore, this problem was not just on the sea coast. Since ozone in clean air has a lifetime of only a few hours, this phenomenon is a measure of the effect and the persistence of both VOC and NOx Plants have both indirect and direct effects on NOx emissions. Plants may affect NOx emissions indirectly by:

1. Competing with microorganisms for soil ammonium and nitrate, thus limiting nitrification and denitrification
2. Altering microclimate at the soil surface (caused by canopy cover and evapotranspiration)

3. Altering soil moisture, soil physical properties, and pH
4. Physically and chemically enhancing the habitats of microorganisms through the addition of carbon and nitrogen compounds to the soil system.

CONCLUSION

The cumulative indirect effects of plants on the soil system and NOx production may either stimulate or limit microbial production of NOx depending on environmental conditions. A few studies have noted that plants greatly alter NOx emissions at the soil-air interface, and increased fluxes of NOx have been seen from soil with clipped vegetation and soil cleared of litter and/ or free of plants, as compared with undisturbed . However, the mechanisms behind increased emissions seen in some of these studies may be a combination of both indirect effects and direct effects of reduced NO_2 deposition on plant surfaces. Agricultural management practices often incorporate the use of different kinds of fertilizers depending on crop type, soil type, and climate, as well as economic factors and availability. Virtually every study of NOx in agricultural systems indicates that application of nitrogen fertilizers results in elevated NOx emissions as compared with background levels; however, only three papers compared NOx emissions among different types of fertilizer in the same field. Although these results were not completely consistent, they do suggest that urea- and ammonia-based fertilizers lead to larger fluxes than do nitrate fertilizers. Because of the dearth of field data on this topic, the relationship between fertilizer type and NOx emissions cannot currently be analysed. Furthermore, analysing data on this relationship from different studies is difficult because of confounding variables in other environmental factors.

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